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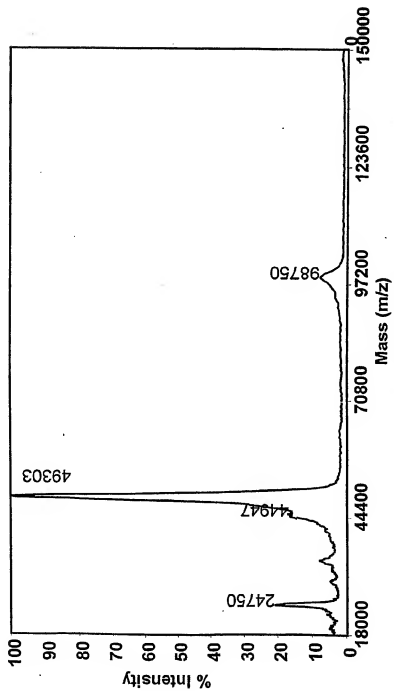


FIG. 158

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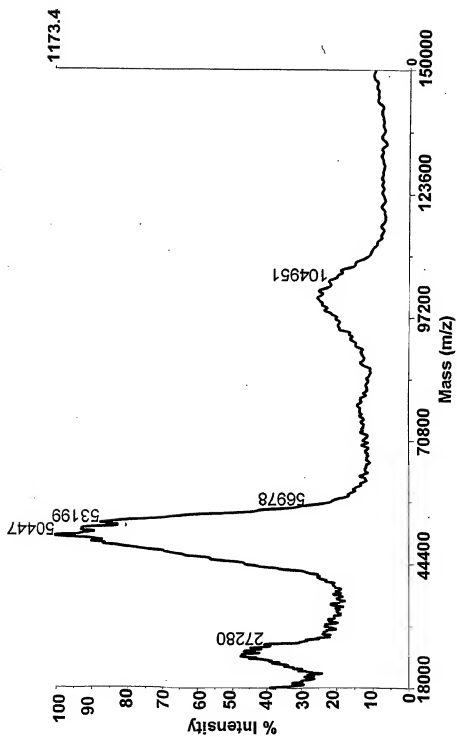


FIG. 159

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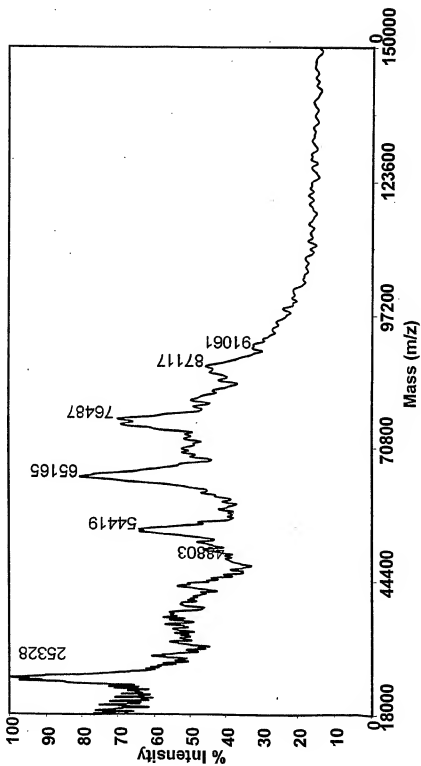


FIG. 160

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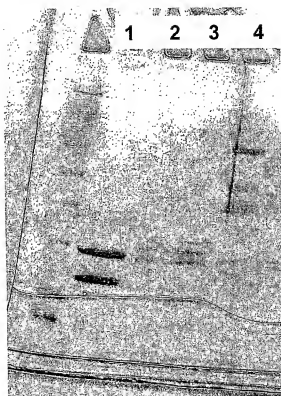


FIG. 161

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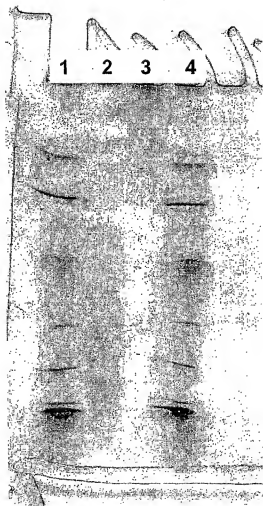


FIG. 162

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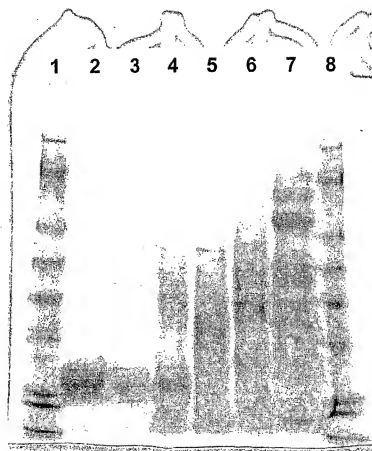


FIG. 163

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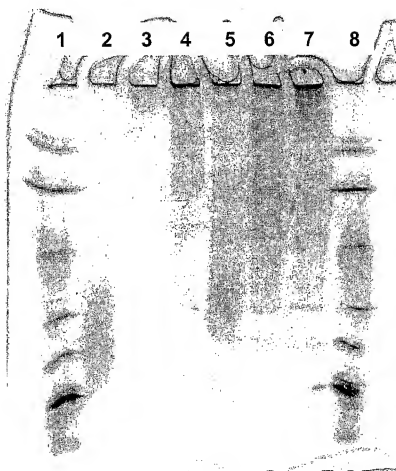


FIG. 164

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FIG. 165

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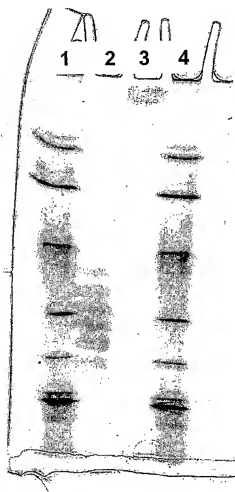


FIG. 166

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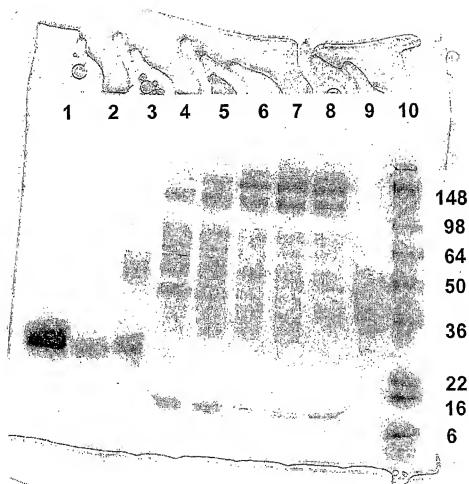


FIG. 167

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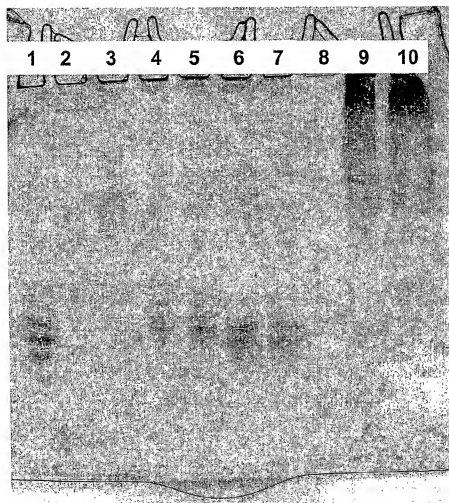
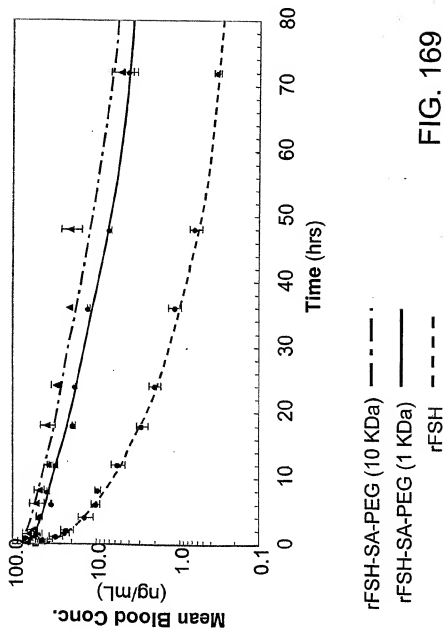


FIG. 168

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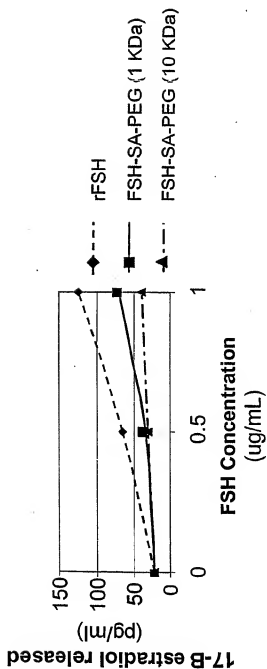


FIG. 170

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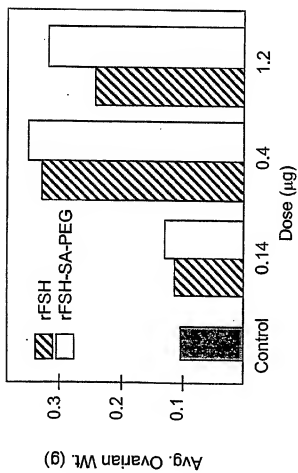


FIG. 171

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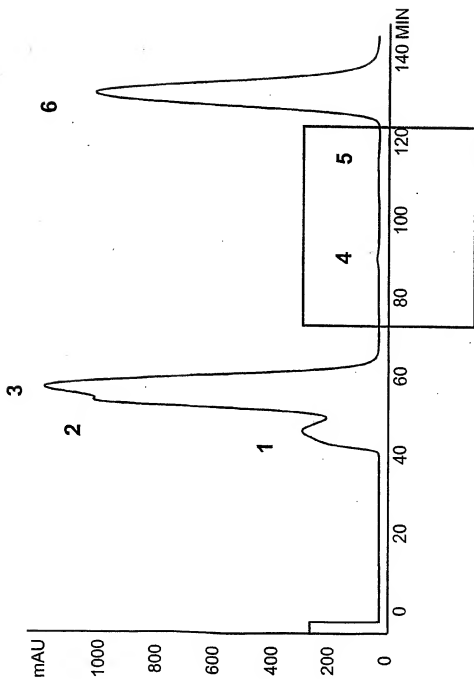


FIG. 172A

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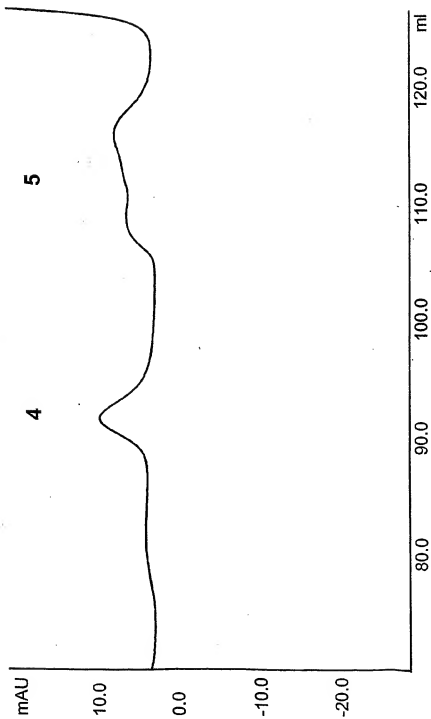


FIG. 172B

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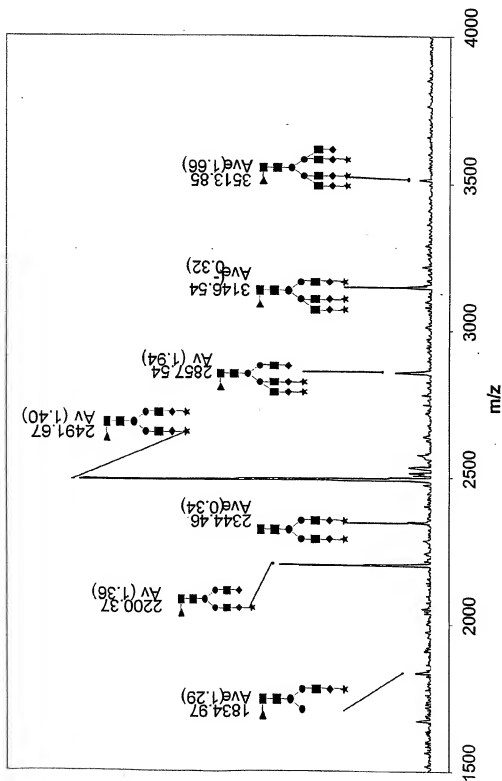


FIG. 173A

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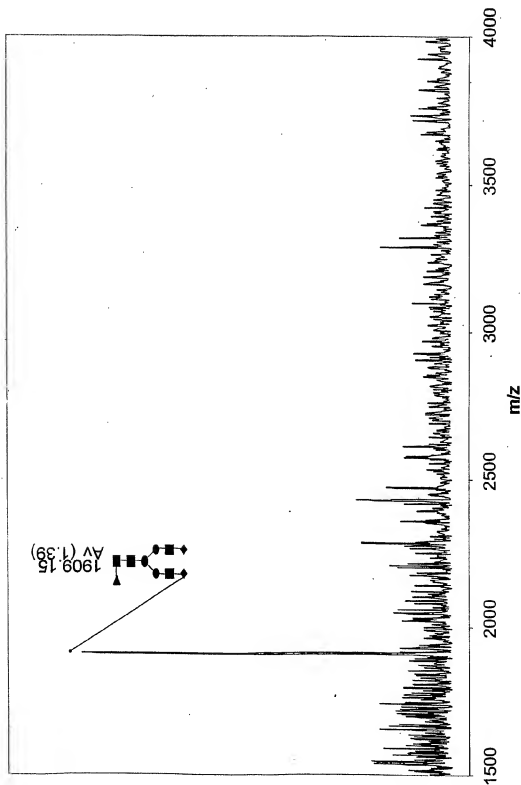


FIG. 173B

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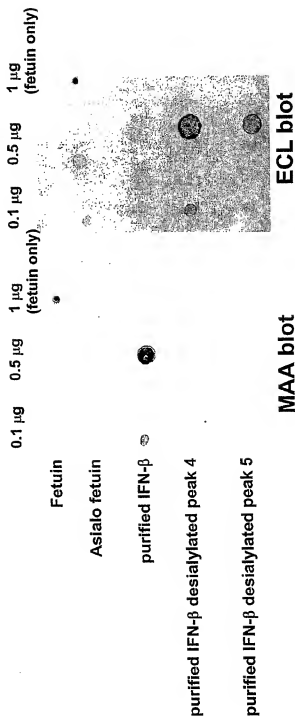


FIG. 174

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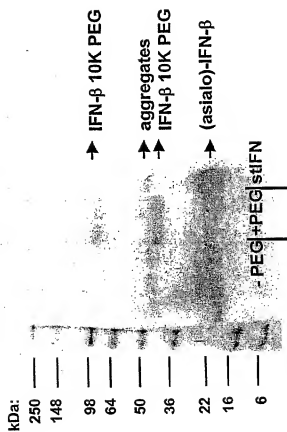
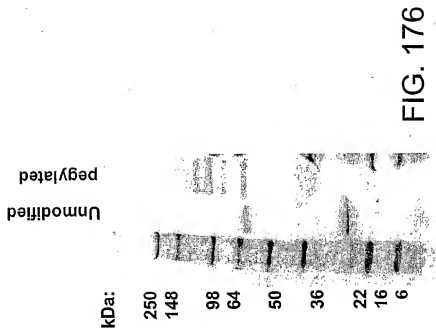


FIG. 175

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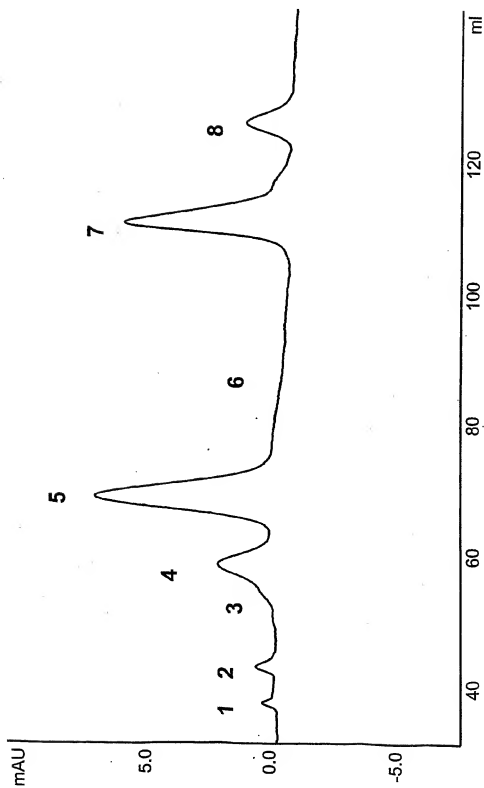


FIG. 177

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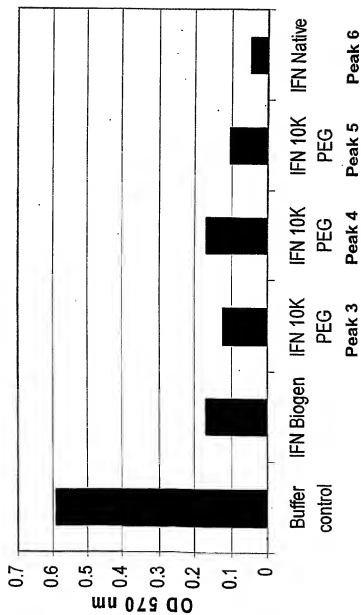


FIG. 178

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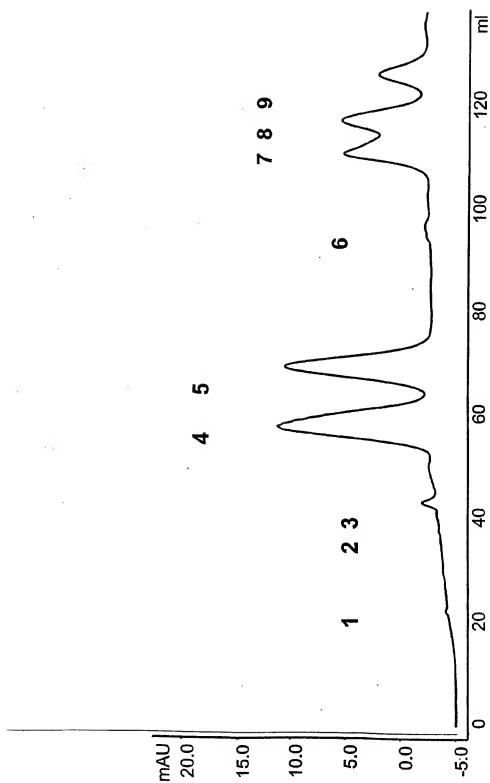
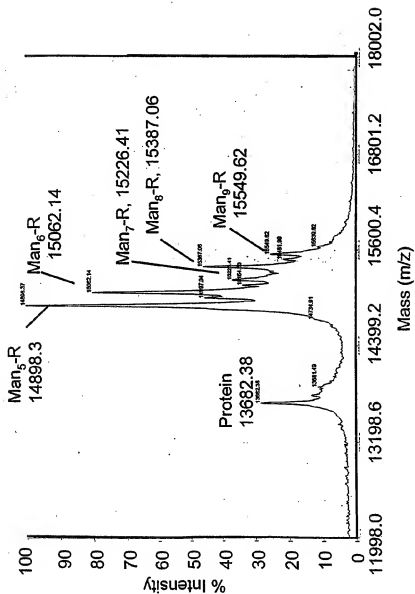


FIG. 179

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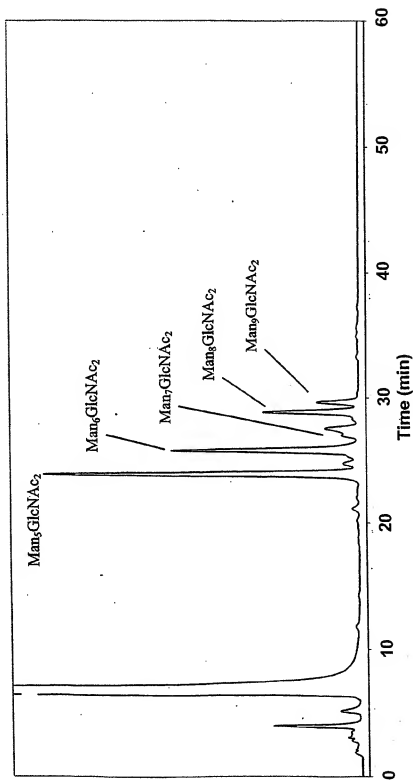


FIG. 180B

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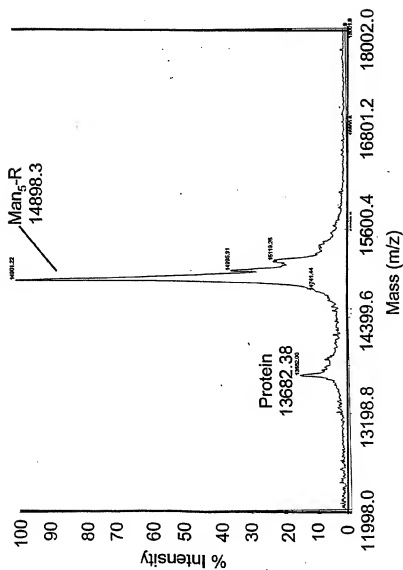


FIG. 182A

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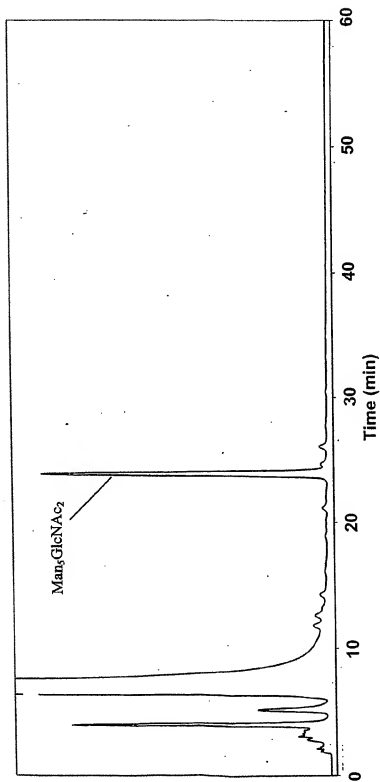


FIG. 182B

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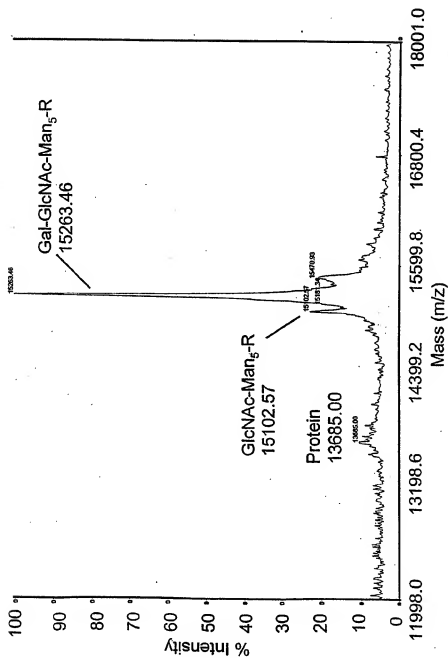


FIG. 185

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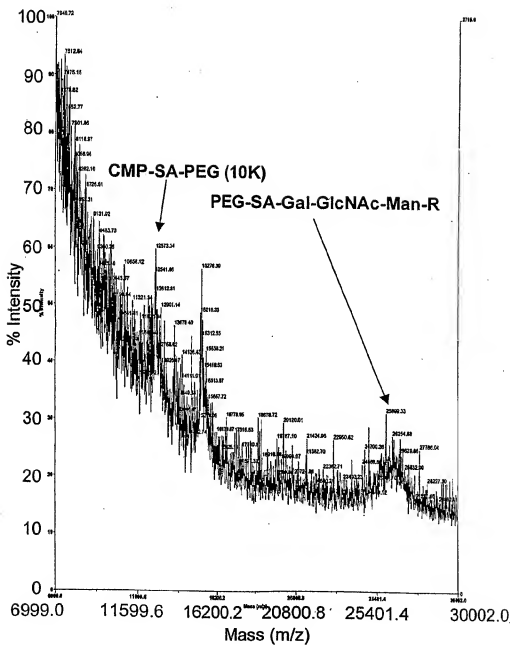


FIG. 187A

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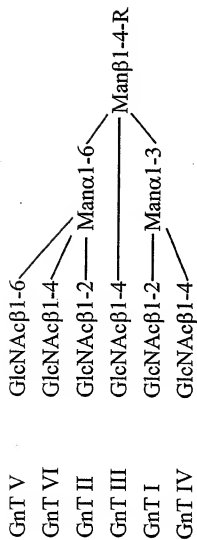


FIG. 189

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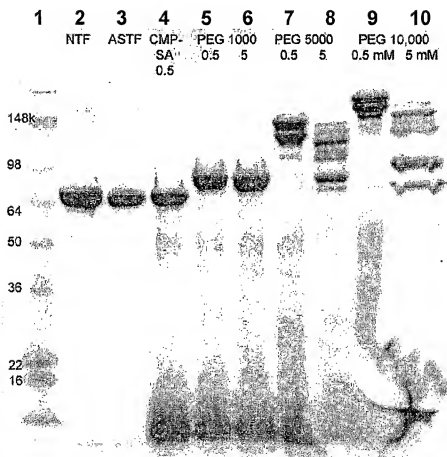


FIG. 190

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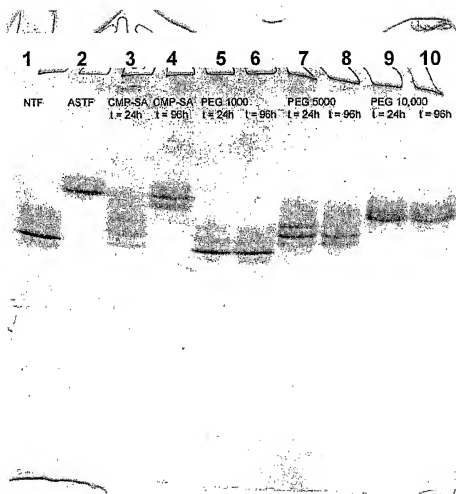
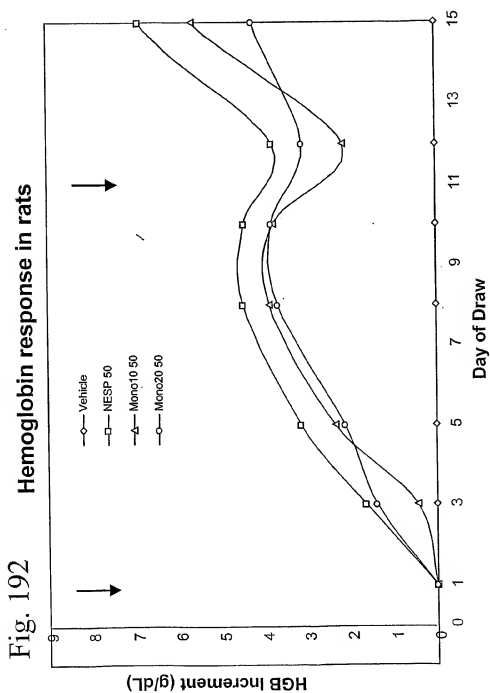


FIG. 191

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SEQUENCE LISTING

<110> Neose Technologies, Inc.
 DeFrees, Shawn
 Zopf, David
 Bayer, Robert
 Hakes, David
 Chen, Xi
 Bowe, Caryne

<120> ERYTHROPOIETIN: REMODELING AND GLYCOCONJUGATION OF
 ERYTHROPOIETIN

<130> 040853-01-5083WO

<150> PCT/US02/32263
 <151> 2002-10-09

<150> US 10/287,994
 <151> 2002-11-5

<150> US 10/360,770
 <151> 2003-01-06

<150> US 10/369,779
 <151> 2003-03-17

<150> US 10/410,945
 <151> 2003-04-09

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 ctgtgccacc ccgaggagct ggtgctgctc ggacactctc tgggcatccc ctgggctccc 180
 ctgagcagct gccccagcca ggccctgcag ctggcaggct gcttgagcca actccataga 240
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 cccaccttgg acacactgca gctggacgtc gccgactttg ccaccacat ctggcagcag 360
 atggaagaac tgggaatggc ccctgccctg cagccacccc aggtgcat gccggccttc 420
 gcctctgctt tccagcgcg gccaggagggt gtcctgggtg cctcccatct gcagagcttc 480
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 <211> 174
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 20 25 30

Glu Lys Leu Cys Ala Thr Tyr Lys Leu Cys His Pro Glu Leu Val
 35 40 45

Leu Leu Gly His Ser Leu Gly Ile Pro Trp Ala Pro Leu Ser Ser Cys
 50 55 60

Pro Ser Gln Ala Leu Gln Leu Ala Gly Cys Leu Ser Gln Leu His Ser
 65 70 75 80

Gly Leu Phe Leu Tyr Gln Gly Leu Leu Gln Ala Leu Glu Gly Ile Ser
 85 90 95

Pro Glu Leu Gly Pro Thr Leu Asp Thr Leu Gln Leu Asp Val Ala Asp
 100 105 110

Phe Ala Thr Thr Ile Trp Gln Gln Met Glu Glu Leu Gly Met Ala Pro
 115 120 125

Ala Leu Gln Pro Thr Gln Gly Ala Met Pro Ala Phe Ala Ser Ala Phe
 130 135 140

Gln Arg Arg Ala Gly Gly Val Leu Val Ala Ser His Leu Gln Ser Phe
 145 150 155 160

Leu Glu Val Ser Tyr Arg Val Leu Arg His Leu Ala Gln Pro
 165 170

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<211> 1733

<212> DNA

<213> Homo sapiens

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 tcaagttaag taaaatgtca atagcctttt aatttaattt ttaattgttt tatcattctt 120
 tgcaataata aaacattaac ttatatactt ttaattttaat gtatagaata gagatataca 180
 taggatattgt aaatagatac acagtgtata tgtgattaaa atataatggg agattcaatc 240
 agaaaaaagt ttctaaaaag gctctggggt aaaagaggaa ggaacaata atgaaaaaaa 300
 tgtggtgaga aaaacagctg aaaacccatg taaagagtgt ataaagaaag caaaaagaga 360
 agtagaaaagt aacacagggg catttggaag atgtaaacga gtatgttccc tatttaaggc 420
 taggcacaaa gcaaggtctt cagagaacct ggagcctaag gtttaggtcc acccatttca 480
 accagtctag cagcatctgc aacatctaca atggccttga cctttgcttt actggtggcc 540
 ctctgtgtgc tcagctgcaa gtcaagctgc tctgtgggct gtgatctgcc tcaaaaccac 600

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caaaaggctg aaaccatccc tgtcctccat gagatgatcc agcagatctt caatctcttc 780
agcacaagg actcatctgc tgcctgggat gagaccctcc tagacaaatt ctacactgaa 840
ctctaccagc agctgaatga cctggaagcc tgtgtgatac aggggggtgg ggtgacagag 900
actccoctga tgaaggagga ctccattctg gctgtgagga aatacttcca aagaatact 960
ctctatctga aagagaagaa atacagccct tgtgcctggg aggttgtcag agcagaaatc 1020
atgagatctt tttctttgtc aacaaacttg caagaaagt taagaagtaa ggaatgaaaa 1080
ctgggtcaac atggaaatga ttttcattga ttogtatgcc agctcacctt tttatgatct 1140
gccatttcaa agactcatgt ttctgctatg accatgacac gatttaaatc ttttcaatg 1200
tttttaggag tattaatcaa cattgtatc agctcttaag gcactagtcc cttacagagg 1260
accatgctga ctgatccatt atctatttaa atatttttaa aatattattt atttaactat 1320
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aacaataata attctgctct cttgtgtatt tgatttttgt atgaaaaaaa ctaaaaatgg 1680
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Lys Ser Ser Cys Ser Val Gly Cys Asp Leu Pro Gln Thr His Ser Leu
20 25 30
Gly Ser Arg Arg Thr Leu Met Leu Leu Ala Gln Met Arg Arg Ile Ser
35 40 45
Leu Phe Ser Cys Leu Lys Asp Arg His Asp Phe Gly Phe Pro Gln Glu
50 55 60
Glu Phe Gly Asn Gln Phe Gln Lys Ala Glu Thr Ile Pro Val Leu His
65 70 75 80
Glu Met Ile Gln Gln Ile Phe Asn Leu Phe Ser Thr Lys Asp Ser Ser

```

4

Thr Thr Ala Leu Ser Met Ser Tyr Asn Leu Leu Gly Phe Leu Gln Arg
 20 25 30
 Ser Ser Asn Phe Gln Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg
 35 40 45
 Leu Glu Tyr Cys Leu Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu
 50 55 60
 Ile Lys Gln Leu Gln Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile
 65 70 75 80
 Tyr Glu Met Leu Gln Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser
 85 90 95
 Ser Thr Gly Trp Asn Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val
 100 105 110
 Tyr His Gln Ile Asn His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu
 115 120 125
 Lys Glu Asp Phe Thr Arg Gly Lys Leu Met Ser Ser Leu His Leu Lys
 130 135 140
 Arg Tyr Tyr Gly Arg Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser
 145 150 155 160
 His Cys Ala Trp Thr Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr
 165 170 175
 Phe Ile Asn Arg Leu Thr Gly Tyr Leu Arg Asn
 180 185

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<211> 1332

<212> DNA

<213> Homo sapiens

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 gcgttctctg aggagctgcg gccgggctcc ctggagaggg agtgcaagga ggagcagtgc 180
 tccttcgagg aggcccgga gatcttcaag gacgcggaga ggacgaagct gttctggatt 240
 tottacagtg atgggggacca gtgtgcctca agtccatgcc agaattgggg ctctctgcaag 300
 gaccagctcc agtcttatat ctgcttctgc ctccctgcct tcgagggccg gaactgtgag 360
 acgcacaagg atgaccagct gatctgtgtg aacgagaacg cggtctgtga gcagtactgc 420
 agtgaccaca cgggcaccaa gcgtcctgt cggtgccacg aggggtactc tctgtgtgca 480
 gacggggtgt cctgcacacc cacagttgaa tatccatgtg gaaaaatacc tattctagaa 540
 aaaagaaatg ccagcaaacc ccaaggccga attgtggggg gcaaggtgtg ccccaaaggg 600
 gagtgtccat ggcaggtcct gttgttggtg aatggagctc agttgtgtgg ggggaccctg 660

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atcaacacca tctgggtggt ctccggcgcc cactgtttcg acaaaatcaa gaactggagg 720
aacctgatcg cgggtgctggg cgagcacgac ctacgagc acgacgggga tgagcagagc 780
cggcggtggt cgcagggtcat catccccagc acgtacgtcc cgggcaccac caaccacgac 840
atcgcgctgc tccgcctgca ccagcccgtg gtccctactg accatgtggt gccctctgc 900
ctgcccgaac ggaactgtct tgagaggacg ctggccttcg tgcgcttctc attggtcagc 960
ggctggggcc agctgctgga cctggcgcc acggcccttg agctcatggt gctcaacgtg 1020
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atcacggagt acatgttctg tgcgggtac tcggatggca gcaaggactc ctgcaagggg 1140
gacagtggag gccacatgc caccactac cggggcactg ggtacctgac gggcatcgtc 1200
agctggggcc agggctgcgc aaccgtgggc cactttgggg tgtacaccag ggtctccag 1260
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<210> 8
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20 25 30
Leu His Arg Arg Arg Arg Ala Asn Ala Phe Leu Glu Glu Leu Arg Pro
35 40 45
Gly Ser Leu Glu Arg Glu Cys Lys Glu Glu Gln Cys Ser Phe Glu Glu
50 55 60
Ala Arg Glu Ile Phe Lys Asp Ala Glu Arg Thr Lys Leu Phe Trp Ile
65 70 75 80
Ser Tyr Ser Asp Gly Asp Gln Cys Ala Ser Ser Pro Cys Gln Asn Gly
85 90 95
Gly Ser Cys Lys Asp Gln Leu Gln Ser Tyr Ile Cys Phe Cys Leu Pro
100 105 110
Ala Phe Glu Gly Arg Asn Cys Glu Thr His Lys Asp Asp Gln Leu Ile
115 120 125
Cys Val Asn Glu Asn Gly Gly Cys Glu Gln Tyr Cys Ser Asp His Thr
130 135 140
Gly Thr Lys Arg Ser Cys Arg Cys His Glu Gly Tyr Ser Leu Leu Ala
145 150 155 160
Asp Gly Val Ser Cys Thr Pro Thr Val Glu Tyr Pro Cys Gly Lys Ile
165 170 175

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Pro Ile Leu Glu Lys Arg Asn Ala Ser Lys Pro Gln Gly Arg Ile Val
 180 185 190
 Gly Gly Lys Val Cys Pro Lys Gly Glu Cys Pro Trp Gln Val Leu Leu
 195 200 205
 Leu Val Asn Gly Ala Gln Leu Cys Gly Gly Thr Leu Ile Asn Thr Ile
 210 215 220
 Trp Val Val Ser Ala Ala His Cys Phe Asp Lys Ile Lys Asn Trp Arg
 225 230 235 240
 Asn Leu Ile Ala Val Leu Gly Glu His Asp Leu Ser Glu His Asp Gly
 245 250 255
 Asp Glu Gln Ser Arg Arg Val Ala Gln Val Ile Ile Pro Ser Thr Tyr
 260 265 270
 Val Pro Gly Thr Thr Asn His Asp Ile Ala Leu Leu Arg Leu His Gln
 275 280 285
 Pro Val Val Leu Thr Asp His Val Val Pro Leu Cys Leu Pro Glu Arg
 290 295 300
 Thr Phe Ser Glu Arg Thr Leu Ala Phe Val Arg Phe Ser Leu Val Ser
 305 310 315 320
 Gly Trp Gly Gln Leu Leu Asp Arg Gly Ala Thr Ala Leu Glu Leu Met
 325 330 335
 Val Leu Asn Val Pro Arg Leu Met Thr Gln Asp Cys Leu Gln Gln Ser
 340 345 350
 Arg Lys Val Gly Asp Ser Pro Asn Ile Thr Glu Tyr Met Phe Cys Ala
 355 360 365
 Gly Tyr Ser Asp Gly Ser Lys Asp Ser Cys Lys Gly Asp Ser Gly Gly
 370 375 380
 Pro His Ala Thr His Tyr Arg Gly Thr Trp Tyr Leu Thr Gly Ile Val
 385 390 395 400
 Ser Trp Gly Gln Gly Cys Ala Thr Val Gly His Phe Gly Val Tyr Thr
 405 410 415
 Arg Val Ser Gln Tyr Ile Glu Trp Leu Gln Lys Leu Met Arg Ser Glu
 420 425 430
 Pro Arg Pro Gly Val Leu Leu Arg Ala Pro Phe Pro
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<210> 9

<211> 1437

<212> DNA

<213> Homo sapiens

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ctgaatcggc caaagaggt taattcaggt aaattggaag agtttgttca agggaaacctt 180
 gagagagaat gtatggaaga aaagtgtagt ttggaagaac caagagaagt ttttgaaaac 240
 actgaaaaga caactgaatt ttggaagcag tatgttgatg gagatcagtg tgagtccaat 300
 ccatgtttaa atggcgccag ttgcaaggat gacattaatt cctatgaatg ttggtgtccc 360
 ttgtgatttg aaggaaagaa ctgtgaatta gatgtaacat gtaacattaa gaatggcaga 420
 tgogagcagt tttgtaaaaa tagtgctgat aacaaggtgg ttgtctctg tactgagggg 480
 tatogacttg cagaaaacca gaagtctgt gaaccagcag tgccatttcc atgtggaaga 540
 gtttctgttt cacaacttcc taagctcacc cgtgctgagg ctgtttttcc tgatgtggac 600
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 tggattgtaa ctgtgcacca ctgtgttgaa actggtgtta aaattacagt tgcgcagggt 840
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 attcctcacc acaactacaa tgcagctatt aataagtaca accatgacat tgcccctctg 960
 gaactggagc aaoccttagt gctaaacagc tacgttacac ctatttgcatt tgctgacaag 1020
 gaatacacga acatcttctc caaatttgga tctggctatg taagtggctg ggcaagagtc 1080
 ttccacaaag ggagatcagc tttagttctt cagtacctta gagttccact tgttgaccga 1140
 gccacatgtc ttgatctac aaagtccacc atctataaca acatgttctg tgctggcttc 1200
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 gaagggacca gtttcttaac tggaattatt agctggggtg aagagtgtgc aatgaaaggc 1320
 aaatattgaa tatataccaa ggtatccogg tatgtcaact ggattaagga aaaaaccaag 1380
 ctacctaatt gaaagatgga ttccaaggt taattcattg gaattgaaaa ttaacag 1437

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 <211> 462
 <212> PRT
 <213> Homo sapiens

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 20 25 30
 Asp His Glu Asn Ala Asn Lys Ile Leu Asn Arg Pro Lys Arg Tyr Asn
 35 40 45
 Ser Gly Lys Leu Glu Glu Phe Val Gln Gly Asn Leu Glu Arg Glu Cys

| | | |
|--|----|----|
| 50 | 55 | 60 |
| Met Glu Glu Lys Cys Ser Phe Glu Glu Pro Arg Glu Val Phe Glu Asn 65 70 75 80 | | |
| Thr Glu Lys Thr Thr Glu Phe Trp Lys Gln Tyr Val Asp Gly Asp Gln 85 90 95 | | |
| Cys Glu Ser Asn Pro Cys Leu Asn Gly Gly Ser Cys Lys Asp Asp Ile 100 105 110 | | |
| Asn Ser Tyr Glu Cys Trp Cys Pro Phe Gly Phe Glu Gly Lys Asn Cys 115 120 125 | | |
| Glu Leu Asp Val Thr Cys Asn Ile Lys Asn Gly Arg Cys Glu Gln Phe 130 135 140 | | |
| Cys Lys Asn Ser Ala Asp Asn Lys Val Val Cys Ser Cys Thr Glu Gly 145 150 155 160 | | |
| Tyr Arg Leu Ala Glu Asn Gln Lys Ser Cys Glu Pro Ala Val Pro Phe 165 170 175 | | |
| Pro Cys Gly Arg Val Ser Val Ser Gln Thr Ser Lys Leu Thr Arg Ala 180 185 190 | | |
| Glu Ala Val Phe Pro Asp Val Asp Tyr Val Asn Pro Thr Glu Ala Glu 195 200 205 | | |
| Thr Ile Leu Asp Asn Ile Thr Gln Gly Thr Gln Ser Phe Asn Asp Phe 210 215 220 | | |
| Thr Arg Val Val Gly Gly Glu Asp Ala Lys Pro Gly Gln Phe Pro Trp 225 230 235 240 | | |
| Gln Val Val Leu Asn Gly Lys Val Asp Ala Phe Cys Gly Gly Ser Ile 245 250 255 | | |
| Val Asn Glu Lys Trp Ile Val Thr Ala Ala His Cys Val Glu Thr Gly 260 265 270 | | |
| Val Lys Ile Thr Val Val Ala Gly Glu His Asn Ile Glu Glu Thr Glu 275 280 285 | | |
| His Thr Glu Gln Lys Arg Asn Val Ile Arg Ala Ile Ile Pro His His 290 295 300 | | |
| Asn Tyr Asn Ala Ala Ile Asn Lys Tyr Asn His Asp Ile Ala Leu Leu 305 310 315 320 | | |
| Glu Leu Asp Glu Pro Leu Val Leu Asn Ser Tyr Val Thr Pro Ile Cys 325 330 335 | | |
| Ile Ala Asp Lys Glu Tyr Thr Asn Ile Phe Leu Lys Phe Gly Ser Gly 340 345 350 | | |
| Tyr Val Ser Gly Trp Ala Arg Val Phe His Lys Gly Arg Ser Ala Leu 355 360 365 | | |
| Val Leu Gln Tyr Leu Arg Val Pro Leu Val Asp Arg Ala Thr Cys Leu 370 375 380 | | |

Arg Ser Thr Lys Phe Thr Ile Tyr Asn Asn Met Phe Cys Ala Gly Phe
385 390 395 400

His Glu Gly Gly Arg Asp Ser Cys Gln Gly Asp Ser Gly Gly Pro His
405 410 415

Val Thr Glu Val Glu Gly Thr Ser Phe Leu Thr Gly Ile Ile Ser Trp
420 425 430

Gly Glu Glu Cys Ala Met Lys Gly Lys Tyr Gly Ile Tyr Thr Lys Val
435 440 445

Ser Arg Tyr Val Asn Trp Ile Lys Glu Lys Thr Lys Leu Thr
450 455 460

<210> 11
<211> 603
<212> DNA
<213> Homo sapiens

<400> 11
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ttcttctccc agccgggtgc cccaatactt cagtgcattg gctgctgctt ctctagagca 180
tatccactc cactaagtc caagaagacg atgttggtcc aaaagaacgt cacctcagag 240
tcacattgct gtgtagctaa atcatataac agggtcacag taatgggggg tttaaagtgt 300
gagaaccaca cggcgtgcc ctgcagtact tgttattatc acaaatotta aatgttttac 360
caagtgcgtt ctgtgatgact gctgattttc tggaatggaa aattaagttg ttagtggtt 420
atggctttgt gagataaac tctctcttct ctaccatac cactttgaca cgcttcaagg 480
atatactgca gcttactgc ctctctcctt atctacagc acaatcagca gctagttct 540
tttcatttgg aatgaataca gcattaagct tgttccactg caaataaagc cttttaaatc 600
atc 603

<210> 12
<211> 116
<212> PRT
<213> Homo sapiens

<400> 12
Met Asp Tyr Tyr Arg Lys Tyr Ala Ala Ile Phe Leu Val Thr Leu Ser
1 5 10
Val Phe Leu His Val Leu His Ser Ala Pro Asp Val Gln Asp Cys Pro
20 25 30
Glu Cys Thr Leu Gln Glu Asn Pro Phe Phe Ser Gln Pro Gly Ala Pro
35 40 45
Ile Leu Gln Cys Met Gly Cys Cys Phe Ser Arg Ala Tyr Pro Thr Pro
50 55 60

Leu Arg Ser Lys Lys Thr Met Leu Val Gln Lys Asn Val Thr Ser Glu
65 70 75 80

Ser Thr Cys Cys Val Ala Lys Ser Tyr Asn Arg Val Thr Val Met Gly
85 90 95

Gly Phe Lys Val Glu Asn His Thr Ala Cys His Cys Ser Thr Cys Tyr
100 105 110

Tyr His Lys Ser
115

<210> 13
<211> 390
<212> DNA
<213> Homo sapiens

<400> 13
atgaagacac tccagttttt ctctcttttc tgtgctgga aagcaatctg ctgcaatagc 60
tgtgagctga ccaacatcac cattgcaata gagaagaag aatgtcggtt ctgcataagc 120
atcaacacca ctgtgtgtgc tggctactgc tacaccaggg atctggtgta taaggaccca 180
gccaggccca aaatccagaa aacatgtacc ttcaaggaa tggtatatga aacagtgaga 240
gtgcccggt gtgtctacca tgcagattcc ttgtatacat acccagtggc caccagtggt 300
cactgtggca agtgtgacag cgacagcact gattgtactg tgcgaggcct ggggccacagc 360
tactgtctct ttggtgaat gaaagaataa 390

<210> 14
<211> 129
<212> PRT
<213> Homo sapiens

<400> 14
Met Lys Thr Leu Gln Phe Phe Phe Leu Phe Cys Cys Trp Lys Ala Ile
1 5 10 15
Cys Cys Asn Ser Cys Glu Leu Thr Asn Ile Thr Ile Ala Ile Glu Lys
20 25 30
Glu Glu Cys Arg Phe Cys Ile Ser Ile Asn Thr Thr Trp Cys Ala Gly
35 40 45
Tyr Cys Tyr Thr Arg Asp Leu Val Tyr Lys Asp Pro Ala Arg Pro Lys
50 55 60
Ile Gln Lys Thr Cys Thr Phe Lys Glu Leu Val Tyr Glu Thr Val Arg
65 70 75 80
Val Pro Gly Cys Ala His His Ala Asp Ser Leu Tyr Thr Tyr Pro Val
85 90 95
Ala Thr Gln Cys His Cys Gly Lys Cys Asp Ser Asp Ser Thr Asp Cys
100 105 110
Thr Val Arg Gly Leu Gly Pro Ser Tyr Cys Ser Phe Gly Glu Met Lys

115

120

125

Glu

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<210> 15
<211> 1342
<212> DNA
<213> Homo sapiens

<400> 15
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ccgccctctc ctccaggccc gtggggctgg cctgcacccg ccgagcttcc cgggatgagg 120
gcccccggtg tggtcacccg gcgcgcacca ggtcgctgag ggaccccggc caggcgcgga 180
gatgggggtg cacgaatgtc ctgcctggct gtggcttctc ctgtccctgc tgtcgctccc 240
tctgggcctc ccagtctcgg gcgccccacc acgcctcacc tgtgacagcc gagtccctgga 300
gaggtagctc ttggaggcca aggaggccga gaatatcacg acgggctgtg ctgaacactg 360
cagcttgaat gagaatatca ctgtcccaga caccaaagtt aatttctatg cctggaagag 420
gatggaggtc gggcagcagg ccgtagaagt ctggcagggc ctggccctgc tgtcggaagc 480
tgtcctgcgg gccagggccc tgttggtcaa ctcttcccag ccgtgggagc cctgcagct 540
gcatgtggat aaagccgtca gtggccttcg cagcctcacc actctgcttc gggctctgcg 600
agcccagaag gaagccatct cccctccaga tgcggcctca gctgctccac tcggaacaat 660
cactgctgac actttccgca aactcttccg agtctaactc aatttctcc ggggaaagct 720
gaagctgtac acaggggagg cctgcaggac aggggacaga tgaccaggtg tgtccacctg 780
ggcatatcca ccacctccct caccaacatt gcttgtgcca caccctcccc gcgcactcct 840
gaaccccgtc gaggggctct cagctcagcg ccagcctgtc ccattggacac tccagtgcga 900
gcaatgacat ctccagggcc agagggaactg tccagagagc aactctgaga tctaaggatg 960
tcacagggcc aacttgaggg ccagagcag gaagcattca gagagcagct ttaactcaag 1020
ggacagagcc atgctgggaa gacgcctgag ctcaactcggc accctgcaaa atttgatgcc 1080
aggacacgct ttggaggcca tttaactgtt ttgcaccta ccattcaggga caggatgacc 1140
tggagaactt agtgggcaag ctgtgacttc tccaggctc acgggcattg gcaactccctt 1200
ggtggcaaga gcccccctga cacgggggtg gtgggaacca tgaagacagg atgggggctg 1260
gcctctggct ctcatggggt ccaagttttg tgtattcttc aaacctattg acaagaactg 1320
aaaccaccaa aaaaaaaaaa aa 1342

<210> 16
<211> 193
<212> PRT
<213> Homo sapiens

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<400> 16

Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu
 1 5 10 15

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu
 20 25 30

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu
 35 40 45

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu
 50 55 60

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg
 65 70 75 80

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu
 85 90 95

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser
 100 105 110

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly
 115 120 125

Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Arg Ala Gln Lys Glu
 130 135 140

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile
 145 150 155 160

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu
 165 170 175

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp
 180 185 190

Arg

<210> 17

<211> 435

<212> DNA

<213> Homo sapiens

<400> 17

atgtggtgc agagcctgct gctcttgggc actgtggcct gcagcatctc tgcacccgcc 60
 cgctcgccca gccccagcac gcagccctgg gagcatgtga atgccatcca ggagggccgg 120
 cgtctctga acctgagtag agacactgct gctgagatga atgaacacagt agaagtcac 180
 tcagaaatgt ttgacctoca ggagccgacc tgcctacaga cccgctcgga gctgtacaag 240
 cagggcctgc ggggcagcct caccagctc aagggccct tgaccatgat gccagccac 300
 tacaagcagc actgccctcc aaccccgaa acttctgtg caaccagat taccacctt 360
 gaaagtcca aaggaacac gaaggacttt ctgcttgtca tcccctttga ctgctgggag 420

ccagtcagg agtga

435

<210> 18
 <211> 144
 <212> PRT
 <213> Homo sapiens

<400> 18
 Met Trp Leu Gln Ser Leu Leu Leu Leu Gly Thr Val Ala Cys Ser Ile
 1 5 10 15
 Ser Ala Pro Ala Arg Ser Pro Ser Pro Ser Thr Gln Pro Trp Glu His
 20 25 30
 Val Asn Ala Ile Gln Glu Ala Arg Arg Leu Leu Asn Leu Ser Arg Asp
 35 40 45
 Thr Ala Ala Glu Met Asn Glu Thr Val Glu Val Ile Ser Glu Met Phe
 50 55 60
 Asp Leu Gln Glu Pro Thr Cys Leu Gln Thr Arg Leu Glu Leu Tyr Lys
 65 70 75 80
 Gln Gly Leu Arg Gly Ser Leu Thr Lys Leu Lys Gly Pro Leu Thr Met
 85 90 95
 Met Ala Ser His Tyr Lys Gln His Cys Pro Pro Thr Pro Glu Thr Ser
 100 105 110
 Cys Ala Thr Gln Ile Ile Thr Phe Glu Ser Phe Lys Glu Asn Leu Lys
 115 120 125
 Asp Phe Leu Leu Val Ile Pro Phe Asp Cys Trp Glu Pro Val Gln Glu
 130 135 140

<210> 19
 <211> 501
 <212> DNA
 <213> Homo sapiens

<400> 19
 atgaaatata caagttatat cttggctttt cagctctgca tcgttttggg ttctcttggc 60
 tgttactgcc aggaccata tgtaaaagaa gcagaaaacc ttaagaataa ttttaatgca 120
 ggctattcag atgtagcgga taatggaact cttttcttag gcattttgaa gaattggaaa 180
 gaggagagt acagaaaaat aatgcagagc caaattgtct ccttttactt caaactttt 240
 aaaaacttta aagatgacca gagcatocaa aagagtgtgg agaccatcaa ggaagacatg 300
 aatgtcaagt ttttcaatag caacaaaaag aaacgagatg acttcgaaaa gctgactaat 360
 tattcggtaa ctgacttgaa tgtccaacgc aaagcaatac atgaactcat ccaagtgatg 420
 gctgaactgt cgccagcagc taaaacaggg aagcgaaaaa ggagtcagat gctgtttcga 480
 ggctgaagag catcccagta a 501
 <210> 20
 <211> 166

<212> PRT

<213> Homo sapiens

<400> 20

Met Lys Tyr Thr Ser Tyr Ile Leu Ala Phe Gln Leu Cys Ile Val Leu
1 5 10 15Gly Ser Leu Gly Cys Tyr Cys Gln Asp Pro Tyr Val Lys Glu Ala Glu
20 25 30Asn Leu Lys Lys Tyr Phe Asn Ala Gly His Ser Asp Val Ala Asp Asn
35 40 45Gly Thr Leu Phe Leu Gly Ile Leu Lys Asn Trp Lys Glu Glu Ser Asp
50 55 60Arg Lys Ile Met Gln Ser Gln Ile Val Ser Phe Tyr Phe Lys Leu Phe
65 70 75 80Lys Asn Phe Lys Asp Asp Gln Ser Ile Gln Lys Ser Val Glu Thr Ile
85 90 95Lys Glu Asp Met Asn Val Lys Phe Phe Asn Ser Asn Lys Lys Lys Arg
100 105 110Asp Asp Phe Glu Lys Leu Thr Asn Tyr Ser Val Thr Asp Leu Asn Val
115 120 125Gln Arg Lys Ala Ile His Glu Leu Ile Gln Val Met Ala Glu Leu Ser
130 135 140Pro Ala Ala Lys Thr Gly Lys Arg Lys Arg Ser Gln Met Leu Phe Arg
145 150 155 160Gly Arg Arg Ala Ser Gln
165

<210> 21

<211> 1352

<212> DNA

<213> Homo sapiens

<400> 21

ctgggacagt gaatcgacaa tgcggtcttc tgtctcgtgg ggcacccctc tgctggcagc 60

cctgtgtctgc ctggtccctg tctccctggc tgaggatccc caggagatg ctgccacaga 120

gacagatata tcccaccatg atcaggatca cccaaccttc aacaagatca cccccaacct 180

ggctgagttc gccttcagcc tataccgaca gctggcacac cagtccaaca gcaccaatat 240

cttctctctc ccagtgagca togctacagc ctttgcaatg ctctccctgg ggaccaaggc 300

tgacaactca gatgaaatcc tggaggggcct gaatttcaac ctacaggaga ttccggaggc 360

tcagatccat gaaggcttcc aggaactcct ccgtaccctc aaccagccag acagccagct 420

ccagctgacc acocggcaatg gcctgttccct cagcgagggc ctgaagctag tggataagtt 480

tttgagggat gttaaaaagt tgtaccactc agaagccttc actgtcaact tcggggacac 540

cgaagaggcc aagaacacaga tcaacgatta cgtggagaag ggtactcaag ggaaatgtgt 600
 ggatttggtc aaggagcttg acagagacac agtttttctg ctggtgaatt acatcttctt 660
 taaaggcaaa tgggagagac cctttgaagt caaggacacc gaggaagagg acttccacgt 720
 ggaccagggtg accaccgtga aggtgcctat gatgaagcgt ttaggcatgt ttaacatcca 780
 gcaactgaag aagctgtcca gctgggtgct gctgatgaaa tacctgggca atgccaccgc 840
 catcttcttc ctgcctgatg aggggaaact acagcacctg gaaaatgaac tcaccacgca 900
 tatcatcacc aagttcctgg aaaatgaaga cagaaggtct gccagcttac atttacccaa 960
 actgtocatt actggaacct atgatctgaa gagcgtcctg ggccaactgg gcatacctaa 1020
 ggtcttcagc aatggggctg acctctccgg ggtcacagag gaggcacccc tgaagctctc 1080
 caaggccgtg cataaggctg tgctgacctat cgacgagaaa gggactgaag ctgctggggc 1140
 catgttttta gagggcctac ccattgtctat ccccccgag gtcaagtcca acaaacctt 1200
 tgtctcttta atgattgaac aaaataccaa gtctccctc ttcatgggaa aagtgggtgaa 1260
 tocccaccaa aaataactgc ctctcgctcc tcaacccctc ccctccatcc ctggccccct 1320
 cctggatga cattaagaa gggttgagct gg 1352

<210> 22
 <211> 418
 <212> PRT
 <213> Homo sapiens

<400> 22
 Met Pro Ser Ser Val Ser Trp Gly Ile Leu Leu Ala Gly Leu Cys
 1 5 10 15
 Cys Leu Val Pro Val Ser Leu Ala Glu Asp Pro Gln Gly Asp Ala Ala
 20 25 30
 Gln Lys Thr Asp Thr Ser His His Asp Gln Asp His Pro Thr Phe Asn
 35 40 45
 Lys Ile Thr Pro Asn Leu Ala Glu Phe Ala Phe Ser Leu Tyr Arg Gln
 50 55 60
 Leu Ala His Gln Ser Asn Ser Thr Asn Ile Phe Phe Ser Pro Val Ser
 65 70 75 80
 Ile Ala Thr Ala Phe Ala Met Leu Ser Leu Gly Thr Lys Ala Asp Thr
 85 90 95
 His Asp Glu Ile Leu Glu Gly Leu Asn Phe Asn Leu Thr Glu Ile Pro
 100 105 110
 Glu Ala Gln Ile His Glu Gly Phe Gln Glu Leu Leu Arg Thr Leu Asn
 115 120 125
 Gln Pro Asp Ser Gln Leu Gln Leu Thr Thr Gly Asn Gly Leu Phe Leu
 130 135 140

Ser Glu Gly Leu Lys Leu Val Asp Lys Phe Leu Glu Asp Val Lys Lys
 145 150 155 160
 Leu Tyr His Ser Glu Ala Phe Thr Val Asn Phe Gly Asp Thr Glu Glu
 165 170 175
 Ala Lys Lys Gln Ile Asn Asp Tyr Val Glu Lys Gly Thr Gln Gly Lys
 180 185 190
 Ile Val Asp Leu Val Lys Glu Leu Asp Arg Asp Thr Val Phe Ala Leu
 195 200 205
 Val Asn Tyr Ile Phe Phe Lys Gly Lys Trp Glu Arg Pro Phe Glu Val
 210 215 220
 Lys Asp Thr Glu Glu Glu Asp Phe His Val Asp Gln Val Thr Thr Val
 225 230 235 240
 Lys Val Pro Met Met Lys Arg Leu Gly Met Phe Asn Ile Gln His Cys
 245 250 255
 Lys Lys Leu Ser Ser Trp Val Leu Leu Met Lys Tyr Leu Gly Asn Ala
 260 265 270
 Thr Ala Ile Phe Phe Leu Pro Asp Glu Gly Lys Leu Gln His Leu Glu
 275 280 285
 Asn Glu Leu Thr His Asp Ile Ile Thr Lys Phe Leu Glu Asn Glu Asp
 290 295 300
 Arg Arg Ser Ala Ser Leu His Leu Pro Lys Leu Ser Ile Thr Gly Thr
 305 310 315 320
 Tyr Asp Leu Lys Ser Val Leu Gly Gln Leu Gly Ile Thr Lys Val Phe
 325 330 335
 Ser Asn Gly Ala Asp Leu Ser Gly Val Thr Glu Glu Ala Pro Leu Lys
 340 345 350
 Leu Ser Lys Ala Val His Lys Ala Val Leu Thr Ile Asp Glu Lys Gly
 355 360 365
 Thr Glu Ala Ala Gly Ala Met Phe Leu Glu Ala Ile Pro Met Ser Ile
 370 375 380
 Pro Pro Glu Val Lys Phe Asn Lys Pro Phe Val Phe Leu Met Ile Glu
 385 390 395 400
 Gln Asn Thr Lys Ser Pro Leu Phe Met Gly Lys Val Val Asn Pro Thr
 405 410 415
 Gln Lys
 <210> 23
 <211> 2004
 <212> DNA
 <213> Homo sapiens
 <400> 23
 gctaacctag tgcctatagc taaggcaggt acctgcatcc ttgtttttgt ttagtggtac 60

ctctatcctt cagagactct ggaacccttg tggctctctc ttcattataat gacctgaggg 120
 ggatggagtt ttcaagtctt tcacagagagg aatgtcccaa gcctttgagt agggtaagca 180
 tcatggctgg cagcctcaca ggtttgcttc tacttcaggc agtgctcgtg gcatacaggtg 240
 cccgcccttg catccctaaa agcttcggct acagctcggg ggtgtgtgtc tgcaatgcc 300
 catactgtga ctcccttgac ccccgacct ttctgtccct tggtaacctc agccgctatg 360
 agagtacacg cagtgggcga cggatggagc tgagtatggg gcccatccag gctaatacaca 420
 cgggcacagg cctgctactg accctgcagc cagaacagaa gttccagaaa gtgaagggat 480
 ttggaggggc catgacagat gctgctgtc tcaacatcct tgccctgtca cccctgtccc 540
 aaaatttgct acttaaatcg tacttctctg aagaaggaat cggatataac atcatccggg 600
 taoccatggc cagctgtgac ttctccatcc gcacctacac ctatgcagac acccctgatg 660
 atttccagtt gcacaacttc agcctcccag aggaagatag caagctcaag atacctctga 720
 ttacccagc cctgcagttg gccagcgtc ccgtttcact ccttgccagc ccctggacat 780
 caoccatctg gctcaagacc aatggagcgg tgaatgggaa ggggtcactc aaggacagc 840
 ccggagacat ctaccaccag accctgggca gatactttgt gaagtccctg gatgcctatg 900
 ctgagcaciaa gttacagttc tgggcagtg cagctgaaaa tgagccttct gctgggctgt 960
 tgagtggata ccccttccag tgccctggct tcacctctga acatcagcga gacttcattg 1020
 ccgtgacct aggtcctacc ctgccaaca gtactcaaca caatgtccgc ctactcatgc 1080
 tggatgacca acgcttctgt ctgcccact gggcaaaagt ggtactgaca gaccagaag 1140
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 aagccacct aggggagaca caccgctgt tcccaaacac catgctcttt gctcagagg 1260
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 gatactcaag gaggcactgg gctcagcctg ggcattaaag ggacagagtc agctcacacg 1800
 ctgtctgtga ctaaaaggag cacagcaggg ccagtgtgag cttacagcga cgtaaagcca 1860
 ggggcaatgg tttgggtgac tcaatttccc ctctaggtgg tgccagggc tggaggcccc 1920

tagaaaaaga tcagtaagcc ccagtgcccc ccagccccc atgettattgt gaacatgcgc 1980
 tgtgtgctgc ttgctttgga aact 2004

<210> 24
 <211> 536
 <212> PRT
 <213> Homo sapiens

<400> 24
 Met Glu Phe Ser Ser Pro Ser Arg Glu Glu Cys Pro Lys Pro Leu Ser
 1 5 10 15
 Arg Val Ser Ile Met Ala Gly Ser Leu Thr Gly Leu Leu Leu Leu Gln
 20 25 30
 Ala Val Ser Trp Ala Ser Gly Ala Arg Pro Cys Ile Pro Lys Ser Phe
 35 40 45
 Gly Tyr Ser Ser Val Val Cys Val Cys Asn Ala Thr Tyr Cys Asp Ser
 50 55 60
 Phe Asp Pro Pro Thr Phe Pro Ala Leu Gly Thr Phe Ser Arg Tyr Glu
 65 70 75 80
 Ser Thr Arg Ser Gly Arg Arg Met Glu Leu Ser Met Gly Pro Ile Gln
 85 90 95
 Ala Asn His Thr Gly Thr Gly Leu Leu Leu Thr Leu Gln Pro Glu Gln
 100 105 110
 Lys Phe Gln Lys Val Lys Gly Phe Gly Gly Ala Met Thr Asp Ala Ala
 115 120 125
 Ala Leu Asn Ile Leu Ala Leu Ser Pro Pro Ala Gln Asn Leu Leu Leu
 130 135 140
 Lys Ser Tyr Phe Ser Glu Glu Gly Ile Gly Tyr Asn Ile Ile Arg Val
 145 150 155 160
 Pro Met Ala Ser Cys Asp Phe Ser Ile Arg Thr Tyr Thr Tyr Ala Asp
 165 170 175
 Thr Pro Asp Asp Phe Gln Leu His Asn Phe Ser Leu Pro Glu Glu Asp
 180 185 190
 Thr Lys Leu Lys Ile Pro Leu Ile His Arg Ala Leu Gln Leu Ala Gln
 195 200 205
 Arg Pro Val Ser Leu Leu Ala Ser Pro Trp Thr Ser Pro Thr Trp Leu
 210 215 220
 Lys Thr Asn Gly Ala Val Asn Gly Lys Gly Ser Leu Lys Gly Gln Pro
 225 230 235 240
 Gly Asp Ile Tyr His Gln Thr Trp Ala Arg Tyr Phe Val Lys Phe Leu
 245 250 255
 Asp Ala Tyr Ala Glu His Lys Leu Gln Phe Trp Ala Val Thr Ala Glu
 260 265 270

Asn Glu Pro Ser Ala Gly Leu Leu Ser Gly Tyr Pro Phe Gln Cys Leu
275 280 285

Gly Phe Thr Pro Glu His Gln Arg Asp Phe Ile Ala Arg Asp Leu Gly
290 295 300

Pro Thr Leu Ala Asn Ser Thr His His Asn Val Arg Leu Leu Met Leu
305 310 315 320

Asp Asp Gln Arg Leu Leu Leu Pro His Trp Ala Lys Val Val Leu Thr
325 330 335

Asp Pro Glu Ala Ala Lys Tyr Val His Gly Ile Ala Val His Trp Tyr
340 345 350

Leu Asp Phe Leu Ala Pro Ala Lys Ala Thr Leu Gly Glu Thr His Arg
355 360 365

Leu Phe Pro Asn Thr Met Leu Phe Ala Ser Glu Ala Cys Val Gly Ser
370 375 380

Lys Phe Trp Glu Gln Ser Val Arg Leu Gly Ser Trp Asp Arg Gly Met
385 390 395 400

Gln Tyr Ser His Ser Ile Ile Thr Asn Leu Leu Tyr His Val Val Gly
405 410 415

Trp Thr Asp Trp Asn Leu Ala Leu Asn Pro Glu Gly Gly Pro Asn Trp
420 425 430

Val Arg Asn Phe Val Asp Ser Pro Ile Ile Val Asp Ile Thr Lys Asp
435 440 445

Thr Phe Tyr Lys Gln Pro Met Phe Tyr His Leu Gly His Phe Ser Lys
450 455 460

Phe Ile Pro Glu Gly Ser Gln Arg Val Gly Leu Val Ala Ser Gln Lys
465 470 475 480

Asn Asp Leu Asp Ala Val Ala Leu Met His Pro Asp Gly Ser Ala Val
485 490 495

Val Val Val Leu Asn Arg Ser Ser Lys Asp Val Pro Leu Thr Ile Lys
500 505 510

Asp Pro Ala Val Gly Phe Leu Glu Thr Ile Ser Pro Gly Tyr Ser Ile
515 520 525

His Thr Tyr Leu Trp His Arg Gln
530 535

<210> 25

<211> 1726

<212> DNA

<213> Homo sapiens

<400> 25

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 Ile Tyr Gln Gln His Gln Ser Trp Leu Arg Pro Val Leu Arg Ser Asn
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 Arg Val Glu Tyr Cys Trp Cys Asn Ser Gly Arg Ala Gln Cys His Ser
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 Val Pro Val Lys Ser Cys Ser Glu Pro Arg Cys Phe Asn Gly Gly Thr
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 Cys Gln Gln Ala Leu Tyr Phe Ser Asp Phe Val Cys Gln Cys Pro Glu
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 Gly Phe Ala Gly Lys Cys Cys Glu Ile Asp Thr Arg Ala Thr Cys Tyr
 115 120 125
 Glu Asp Gln Gly Ile Ser Tyr Arg Gly Thr Trp Ser Thr Ala Glu Ser
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 Gly Ala Glu Cys Thr Asn Trp Asn Ser Ser Ala Leu Ala Gln Lys Pro
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 Tyr Ser Gly Arg Arg Pro Asp Ala Ile Arg Leu Gly Leu Gly Asn His
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 Asn Tyr Cys Arg Asn Pro Asp Arg Asp Ser Lys Pro Trp Cys Tyr Val
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 Phe Lys Ala Gly Lys Tyr Ser Ser Glu Phe Cys Ser Thr Pro Ala Cys
 195 200 205
 Ser Glu Gly Asn Ser Asp Cys Tyr Phe Gly Asn Gly Ser Ala Tyr Arg
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 Gly Thr His Ser Leu Thr Glu Ser Gly Ala Ser Cys Leu Pro Trp Asn
 225 230 235 240
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 245 250 255
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 260 265 270
 Asp Ala Lys Pro Trp Cys His Val Leu Lys Asn Arg Arg Leu Thr Trp
 275 280 285
 Glu Tyr Cys Asp Val Pro Ser Cys Ser Thr Cys Gly Leu Arg Gln Tyr
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Asn Gly Ile Asn Asn Tyr Lys Asn Pro Lys Leu Thr Arg Met Leu Thr
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Phe Lys Phe Tyr Met Pro Lys Lys Ala Thr Glu Leu Lys Gln Leu Gln
65 70 75 80
Cys Leu Glu Glu Glu Leu Lys Pro Leu Glu Glu Val Leu Asn Leu Ala
85 90 95
Gln Ser Lys Asn Phe His Leu Arg Pro Arg Asp Leu Ile Ser Asn Ile
100 105 110
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 50 55 60
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 Ala Lys Pro Arg Pro Trp Met Gly Leu Leu Gly Pro Thr Ile Gln
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 Ala Glu Val Tyr Asp Thr Val Val Ile Thr Leu Lys Asn Met Ala Ser
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 His Pro Val Ser Leu His Ala Val Gly Val Ser Tyr Trp Lys Ala Ser
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 Glu Gly Ala Glu Tyr Asp Asp Gln Thr Ser Gln Arg Glu Lys Glu Asp
 130 135 140
 Asp Lys Val Phe Pro Gly Gly Ser His Thr Tyr Val Trp Gln Val Leu
 145 150 155 160
 Lys Glu Asn Gly Pro Met Ala Ser Asp Pro Leu Cys Leu Thr Tyr Ser
 165 170 175

Tyr Leu Ser His Val Asp Leu Val Lys Asp Leu Asn Ser Gly Leu Ile
 180 185 190
 Gly Ala Leu Leu Val Cys Arg Glu Gly Ser Leu Ala Lys Glu Lys Thr
 195 200 205
 Gln Thr Leu His Lys Phe Ile Leu Leu Phe Ala Val Phe Asp Glu Gly
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 Lys Ser Trp His Ser Glu Thr Lys Asn Ser Leu Met Gln Asp Arg Asp
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 His Gly Ile Thr Asp Val Arg Pro Leu Tyr Ser Arg Arg Leu Pro Lys

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| Gly Val Lys His Leu Lys Asp Phe | Pro Ile Leu Pro Gly Glu Ile Phe | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 515 | | | | | | 520 | | | | | | 525 | | | | | | | | | | | | | | | | | |
| Lys Tyr Lys Trp Thr Val Thr Val Glu Asp Gly | Pro Thr Lys Ser Asp | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| Pro Arg Cys Leu Thr Arg Tyr Tyr Ser Ser Phe Val Asn Met Glu Arg | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| Ser Val Asp Gln Arg Gly Asn Gln Ile Met Ser Asp Lys Arg Asn Val | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 580 | | | | | | | | | | | | | | | | | | | 590 | | | | | | | | | | |
| Ile Leu Phe Ser Val Phe Asp Glu Asn Arg Ser Trp Tyr Leu Thr Glu | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 595 | | | | | | | | | | | | | | | | | | | 605 | | | | | | | | | | |
| Asn Ile Gln Arg Phe Leu Pro Asn Pro Ala Gly Val Gln Leu Glu Asp | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 610 | | | | | | | | | | | | | | | | | | | 620 | | | | | | | | | | |
| Pro Glu Phe Gln Ala Ser Asn Ile Met His Ser Ile Asn Gly Tyr Val | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 625 | | | | | | | | | | | | | | | | | | | 640 | | | | | | | | | | |
| Phe Asp Ser Leu Gln Leu Ser Val Cys Leu His Glu Val Ala Tyr Trp | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 645 | | | | | | | | | | | | | | | | | | | 655 | | | | | | | | | | |
| Tyr Ile Leu Ser Ile Gly Ala Gln Thr Asp Phe Leu Ser Val Phe Phe | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 660 | | | | | | | | | | | | | | | | | | | 670 | | | | | | | | | | |
| Ser Gly Tyr Thr Phe Lys His Lys Met Val Tyr Glu Asp Thr Leu Thr | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 675 | | | | | | | | | | | | | | | | | | | 685 | | | | | | | | | | |
| Leu Phe Pro Phe Ser Gly Glu Thr Val Phe Met Ser Met Glu Asn Pro | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 690 | | | | | | | | | | | | | | | | | | | 700 | | | | | | | | | | |
| Gly Leu Trp Ile Leu Gly Cys His Asn Ser Asp Phe Arg Asn Arg Gly | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 705 | | | | | | | | | | | | | | | | | | | 720 | | | | | | | | | | |
| Met Thr Ala Leu Leu Lys Val Ser Ser Cys Asp Lys Asn Thr Gly Asp | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 725 | | | | | | | | | | | | | | | | | | | 735 | | | | | | | | | | |
| Tyr Tyr Glu Asp Ser Tyr Glu Asp Ile Ser Ala Tyr Leu Leu Ser Lys | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 740 | | | | | | | | | | | | | | | | | | | 750 | | | | | | | | | | |
| Asn Asn Ala Ile Glu Pro Arg Ser Phe Ser Gln Asn Ser Arg His Arg | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 755 | | | | | | | | | | | | | | | | | | | 765 | | | | | | | | | | |
| Ser Thr Arg Gln Lys Gln Phe Asn Ala Thr Thr Ile Pro Glu Asn Asp | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 770 | | | | | | | | | | | | | | | | | | | 780 | | | | | | | | | | |
| Ile Glu Lys Thr Asp Pro Trp Phe Ala His Arg Thr Pro Met Pro Lys | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 785 | | | | | | | | | | | | | | | | | | | 800 | | | | | | | | | | |
| Ile Gln Asn Val Ser Ser Ser Asp Leu Leu Met Leu Leu Arg Gln Ser | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 805 | | | | | | | | | | | | | | | | | | | 815 | | | | | | | | | | |
| Pro Thr Pro His Gly Leu Ser Leu Ser Asp Leu Gln Glu Ala Lys Tyr | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 820 | | | | | | | | | | | | | | | | | | | 830 | | | | | | | | | | |

Glu Thr Phe Ser Asp Asp Pro Ser Pro Gly Ala Ile Asp Ser Asn Asn
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 Ser Leu Ser Glu Met Thr His Phe Arg Pro Gln Leu His His Ser Gly
 850 855 860
 Asp Met Val Phe Thr Pro Glu Ser Gly Leu Gln Leu Arg Leu Asn Glu
 865 870 875 880
 Lys Leu Gly Thr Thr Ala Ala Thr Glu Leu Lys Lys Leu Asp Phe Lys
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 Val Ser Ser Thr Ser Asn Asn Leu Ile Ser Thr Ile Pro Ser Asp Asn
 900 905 910
 Leu Ala Ala Gly Thr Asp Asn Thr Ser Ser Leu Gly Pro Ser Ser Met
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 Pro Val His Tyr Asp Ser Gln Leu Asp Thr Thr Leu Phe Gly Lys Lys
 930 935 940
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 945 950 955 960
 Asn Asn Asp Ser Lys Leu Leu Glu Ser Gly Leu Met Asn Ser Gln Glu
 965 970 975
 Ser Ser Trp Gly Lys Asn Val Ser Ser Thr Glu Ser Gly Arg Leu Phe
 980 985 990
 Lys Gly Lys Arg Ala His Gly Pro Ala Leu Leu Thr Lys Asp Asn Ala
 995 1000 1005
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 1055 1060 1065
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 1070 1075 1080
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 Lys Lys Glu Gly Pro Ile Pro Pro Asp Ala Gln Asn Pro Asp Met
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 1115 1120 1125
 Gln Arg Thr His Gly Lys Asn Ser Leu Asn Ser Gly Gln Gly Pro
 1130 1135 1140

| | | | | | | | | |
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| Gly Gln | Asn Phe | Leu Ser | Glu | Lys Asn | Lys Val | Val | Val Gly | Lys |
| 1160 | | | 1165 | | | 1170 | | |
| Gly Glu | Phe Thr | Lys Asp | Val | Gly Leu | Lys Glu | Met | Val Phe | Pro |
| 1175 | | | 1180 | | | 1185 | | |
| Ser Ser | Arg Asn | Leu Phe | Leu | Thr Asn | Leu Asp | Asn | Leu His | Glu |
| 1190 | | | 1195 | | | 1200 | | |
| Asn Asn | Thr His | Asn Gln | Glu | Lys Lys | Ile Gln | Glu | Glu Ile | Glu |
| 1205 | | | 1210 | | | 1215 | | |
| Lys Lys | Glu Thr | Leu Ile | Gln | Glu Asn | Val Val | Leu | Pro Gln | Ile |
| 1220 | | | 1225 | | | 1230 | | |
| His Thr | Val Thr | Gly Thr | Lys | Asn Phe | Met Lys | Asn | Leu Phe | Leu |
| 1235 | | | 1240 | | | 1245 | | |
| Leu Ser | Thr Arg | Gln Asn | Val | Glu Gly | Ser Tyr | Asp | Gly Ala | Tyr |
| 1250 | | | 1255 | | | 1260 | | |
| Ala Pro | Val Leu | Gln Asp | Phe | Arg Ser | Leu Asn | Asp | Ser Thr | Asn |
| 1265 | | | 1270 | | | 1275 | | |
| Arg Thr | Lys Lys | His Thr | Ala | His Phe | Ser Lys | Lys | Gly Glu | Glu |
| 1280 | | | 1285 | | | 1290 | | |
| Glu Asn | Leu Glu | Gly Leu | Gly | Asn Gln | Thr Lys | Gln | Ile Val | Glu |
| 1295 | | | 1300 | | | 1305 | | |
| Lys Tyr | Ala Cys | Thr Thr | Arg | Ile Ser | Pro Asn | Thr | Ser Gln | Gln |
| 1310 | | | 1315 | | | 1320 | | |
| Asn Phe | Val Thr | Gln Arg | Ser | Lys Arg | Ala Leu | Lys | Gln Phe | Arg |
| 1325 | | | 1330 | | | 1335 | | |
| Leu Pro | Leu Glu | Glu Thr | Glu | Leu Glu | Lys Arg | Ile | Ile Val | Asp |
| 1340 | | | 1345 | | | 1350 | | |
| Asp Thr | Ser Thr | Gln Trp | Ser | Lys Asn | Met Lys | His | Leu Thr | Pro |
| 1355 | | | 1360 | | | 1365 | | |
| Ser Thr | Leu Thr | Gln Ile | Asp | Tyr Asn | Glu Lys | Glu | Lys Gly | Ala |
| 1370 | | | 1375 | | | 1380 | | |
| Ile Thr | Gln Ser | Pro Leu | Ser | Asp Cys | Leu Thr | Arg | Ser His | Ser |
| 1385 | | | 1390 | | | 1395 | | |
| Ile Pro | Gln Ala | Asn Arg | Ser | Pro Leu | Pro Ile | Ala | Lys Val | Ser |
| 1400 | | | 1405 | | | 1410 | | |
| Ser Phe | Pro Ser | Ile Arg | Pro | Ile Tyr | Leu Thr | Arg | Val Leu | Phe |
| 1415 | | | 1420 | | | 1425 | | |
| Gln Asp | Asn Ser | Ser His | Leu | Pro Ala | Ala Ser | Tyr | Arg Lys | Lys |
| 1430 | | | 1435 | | | 1440 | | |
| Asp Ser | Gly Val | Gln Glu | Ser | Ser His | Phe Leu | Gln | Gly Ala | Lys |

| | | |
|---|------|------|
| 1445 | 1450 | 1455 |
| Lys Asn Asn Leu Ser Leu Ala Ile Leu Thr Leu Glu Met Thr Gly 1460 1465 1470 | | |
| Asp Gln Arg Glu Val Gly Ser Leu Gly Thr Ser Ala Thr Asn Ser 1475 1480 1485 | | |
| Val Thr Tyr Lys Lys Val Glu Asn Thr Val Leu Pro Lys Pro Asp 1490 1495 1500 | | |
| Leu Pro Lys Thr Ser Gly Lys Val Glu Leu Leu Pro Lys Val His 1505 1510 1515 | | |
| Ile Tyr Gln Lys Asp Leu Phe Pro Thr Glu Thr Ser Asn Gly Ser 1520 1525 1530 | | |
| Pro Gly His Leu Asp Leu Val Glu Gly Ser Leu Leu Gln Gly Thr 1535 1540 1545 | | |
| Glu Gly Ala Ile Lys Trp Asn Glu Ala Asn Arg Pro Gly Lys Val 1550 1555 1560 | | |
| Pro Phe Leu Arg Val Ala Thr Glu Ser Ser Ala Lys Thr Pro Ser 1565 1570 1575 | | |
| Lys Leu Leu Asp Pro Leu Ala Trp Asp Asn His Tyr Gly Thr Gln 1580 1585 1590 | | |
| Ile Pro Lys Glu Glu Trp Lys Ser Gln Glu Lys Ser Pro Glu Lys 1595 1600 1605 | | |
| Thr Ala Phe Lys Lys Lys Asp Thr Ile Leu Ser Leu Asn Ala Cys 1610 1615 1620 | | |
| Glu Ser Asn His Ala Ile Ala Ala Ile Asn Glu Gly Gln Asn Lys 1625 1630 1635 | | |
| Pro Glu Ile Glu Val Thr Trp Ala Lys Gln Gly Arg Thr Glu Arg 1640 1645 1650 | | |
| Leu Cys Ser Gln Asn Pro Pro Val Leu Lys Arg His Gln Arg Glu 1655 1660 1665 | | |
| Ile Thr Arg Thr Thr Leu Gln Ser Asp Gln Glu Glu Ile Asp Tyr 1670 1675 1680 | | |
| Asp Asp Thr Ile Ser Val Glu Met Lys Lys Glu Asp Phe Asp Ile 1685 1690 1695 | | |
| Tyr Asp Glu Asp Glu Asn Gln Ser Pro Arg Ser Phe Gln Lys Lys 1700 1705 1710 | | |
| Thr Arg His Tyr Phe Ile Ala Ala Val Glu Arg Leu Trp Asp Tyr 1715 1720 1725 | | |
| Gly Met Ser Ser Ser Pro His Val Leu Arg Asn Arg Ala Gln Ser 1730 1735 1740 | | |
| Gly Ser Val Pro Gln Phe Lys Lys Val Val Phe Gln Glu Phe Thr 1745 1750 1755 | | |

| | | | |
|---------|---------------------|---------------------|-------------|
| Asp Gly | Ser Phe Thr Gln Pro | Leu Tyr Arg Gly Glu | Leu Asn Glu |
| 1760 | 1765 | 1770 | |
| His Leu | Gly Leu Leu Gly Pro | Tyr Ile Arg Ala Glu | Val Glu Asp |
| 1775 | 1780 | 1785 | |
| Asn Ile | Met Val Thr Phe Arg | Asn Gln Ala Ser Arg | Pro Tyr Ser |
| 1790 | 1795 | 1800 | |
| Phe Tyr | Ser Ser Leu Ile Ser | Tyr Glu Glu Asp Gln | Arg Gln Gly |
| 1805 | 1810 | 1815 | |
| Ala Glu | Pro Arg Lys Asn Phe | Val Lys Pro Asn Glu | Thr Lys Thr |
| 1820 | 1825 | 1830 | |
| Tyr Phe | Trp Lys Val Gln His | His Met Ala Pro Thr | Lys Asp Glu |
| 1835 | 1840 | 1845 | |
| Phe Asp | Cys Lys Ala Trp Ala | Tyr Phe Ser Asp Val | Asp Leu Glu |
| 1850 | 1855 | 1860 | |
| Lys Asp | Val His Ser Gly Leu | Ile Gly Pro Leu Leu | Val Cys His |
| 1865 | 1870 | 1875 | |
| Thr Asn | Thr Leu Asn Pro Ala | His Gly Arg Gln Val | Thr Val Gln |
| 1880 | 1885 | 1890 | |
| Glu Phe | Ala Leu Phe Phe Thr | Ile Phe Asp Glu Thr | Lys Ser Trp |
| 1895 | 1900 | 1905 | |
| Tyr Phe | Thr Glu Asn Met Glu | Arg Asn Cys Arg Ala | Pro Cys Asn |
| 1910 | 1915 | 1920 | |
| Ile Gln | Met Glu Asp Pro Thr | Phe Lys Glu Asn Tyr | Arg Phe His |
| 1925 | 1930 | 1935 | |
| Ala Ile | Asn Gly Tyr Ile Met | Asp Thr Leu Pro Gly | Leu Val Met |
| 1940 | 1945 | 1950 | |
| Ala Gln | Asp Gln Arg Ile Arg | Trp Tyr Leu Leu Ser | Met Gly Ser |
| 1955 | 1960 | 1965 | |
| Asn Glu | Asn Ile His Ser Ile | His Phe Ser Gly His | Val Phe Thr |
| 1970 | 1975 | 1980 | |
| Val Arg | Lys Lys Glu Glu Tyr | Lys Met Ala Leu Tyr | Asn Leu Tyr |
| 1985 | 1990 | 1995 | |
| Pro Gly | Val Phe Glu Thr Val | Glu Met Leu Pro Ser | Lys Ala Gly |
| 2000 | 2005 | 2010 | |
| Ile Trp | Arg Val Glu Cys Leu | Ile Gly Glu His Leu | His Ala Gly |
| 2015 | 2020 | 2025 | |
| Met Ser | Thr Leu Phe Leu Val | Tyr Ser Asn Lys Cys | Gln Thr Pro |
| 2030 | 2035 | 2040 | |
| Leu Gly | Met Ala Ser Gly His | Ile Arg Asp Phe Gln | Ile Thr Ala |
| 2045 | 2050 | 2055 | |

Ser Gly Gln Tyr Gly Gln Trp Ala Pro Lys Leu Ala Arg Leu His
 2060 2070
 Tyr Ser Gly Ser Ile Asn Ala Trp Ser Thr Lys Glu Pro Phe Ser
 2075 2080 2085
 Trp Ile Lys Val Asp Leu Leu Ala Pro Met Ile Ile His Gly Ile
 2090 2095 2100
 Lys Thr Gln Gly Ala Arg Gln Lys Phe Ser Ser Leu Tyr Ile Ser
 2105 2110 2115
 Gln Phe Ile Ile Met Tyr Ser Leu Asp Gly Lys Lys Trp Gln Thr
 2120 2125 2130
 Tyr Arg Gly Asn Ser Thr Gly Thr Leu Met Val Phe Phe Gly Asn
 2135 2140 2145
 Val Asp Ser Ser Gly Ile Lys His Asn Ile Phe Asn Pro Pro Ile
 2150 2155 2160
 Ile Ala Arg Tyr Ile Arg Leu His Pro Thr His Tyr Ser Ile Arg
 2165 2170 2175
 Ser Thr Leu Arg Met Glu Leu Met Gly Cys Asp Leu Asn Ser Cys
 2180 2185 2190
 Ser Met Pro Leu Gly Met Glu Ser Lys Ala Ile Ser Asp Ala Gln
 2195 2200 2205
 Ile Thr Ala Ser Ser Tyr Phe Thr Asn Met Phe Ala Thr Trp Ser
 2210 2215 2220
 Pro Ser Lys Ala Arg Leu His Leu Gln Gly Arg Ser Asn Ala Trp
 2225 2230 2235
 Arg Pro Gln Val Asn Asn Pro Lys Glu Trp Leu Gln Val Asp Phe
 2240 2245 2250
 Gln Lys Thr Met Lys Val Thr Gly Val Thr Thr Gln Gly Val Lys
 2255 2260 2265
 Ser Leu Leu Thr Ser Met Tyr Val Lys Glu Phe Leu Ile Ser Ser
 2270 2275 2280
 Ser Gln Asp Gly His Gln Trp Thr Leu Phe Phe Gln Asn Gly Lys
 2285 2290 2295
 Val Lys Val Phe Gln Gly Asn Gln Asp Ser Phe Thr Pro Val Val
 2300 2305 2310
 Asn Ser Leu Asp Pro Pro Leu Leu Thr Arg Tyr Leu Arg Ile His
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<212> DNA

<213> Homo sapiens

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<211> 461

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<213> Homo sapiens

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 35 40 45
 Thr Ala Gln Met Cys Cys Ser Lys Cys Ser Pro Gly Gln His Ala Lys
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 Val Phe Cys Thr Lys Thr Ser Asp Thr Val Cys Asp Ser Cys Glu Asp
 65 70 75 80
 Ser Thr Tyr Thr Gln Leu Trp Asn Trp Val Pro Glu Cys Leu Ser Cys
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 Gly Ser Arg Cys Ser Ser Asp Gln Val Glu Thr Gln Ala Cys Thr Arg
 100 105 110
 Glu Gln Asn Arg Ile Cys Thr Cys Arg Pro Gly Trp Tyr Cys Ala Leu
 115 120 125
 Ser Lys Gln Glu Gly Cys Arg Leu Cys Ala Pro Leu Arg Lys Cys Arg
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 Pro Gly Phe Gly Val Ala Arg Pro Gly Thr Glu Thr Ser Asp Val Val
 145 150 155 160
 Cys Lys Pro Cys Ala Pro Gly Thr Phe Ser Asn Thr Thr Ser Ser Thr
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 Asp Ile Cys Arg Pro His Gln Ile Cys Asn Val Val Ala Ile Pro Gly
 180 185 190
 Asn Ala Ser Met Asp Ala Val Cys Thr Ser Thr Ser Pro Thr Arg Ser
 195 200 205
 Met Ala Pro Gly Ala Val His Leu Pro Gln Pro Val Ser Thr Arg Ser
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 Gln His Thr Gln Pro Thr Pro Glu Pro Ser Thr Ala Pro Ser Thr Ser
 225 230 235 240
 Phe Leu Leu Pro Met Gly Pro Ser Pro Pro Ala Glu Gly Ser Thr Gly
 245 250 255
 Asp Phe Ala Leu Pro Val Gly Leu Ile Val Gly Val Thr Ala Leu Gly
 260 265 270
 Leu Leu Ile Ile Gly Val Val Asn Cys Val Ile Met Thr Gln Val Lys
 275 280 285
 Lys Lys Pro Leu Cys Leu Gln Arg Glu Ala Lys Val Pro His Leu Pro
 290 295 300
 Ala Asp Lys Ala Arg Gly Thr Gln Gly Pro Glu Gln Gln His Leu Leu
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 Ile Thr Ala Pro Ser Ser Ser Ser Ser Ser Leu Glu Ser Ser Ala Ser

| | | | | | | |
|-------------|---|--|-----|--|-----|--|
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| Ala Leu Asp | Arg Arg Ala Pro Thr Arg Asn Gln Pro Gln Ala Pro Gly | | | | | |
| | 340 | | 345 | | 350 | |
| Val Glu Ala | Ser Gly Ala Gly Glu Ala Arg Ala Ser Thr Gly Ser Ser | | | | | |
| | 355 | | 360 | | 365 | |
| Asp Ser Ser | Pro Gly Gly His Gly Thr Gln Val Asn Val Thr Cys Ile | | | | | |
| | 370 | | 375 | | 380 | |
| Val Asn Val | Cys Ser Ser Ser Asp His Ser Ser Gln Cys Ser Ser Gln | | | | | |
| | 385 | | 390 | | 395 | |
| Ala Ser Ser | Thr Met Gly Asp Thr Asp Ser Ser Pro Ser Glu Ser Pro | | | | | |
| | 405 | | 410 | | 415 | |
| Lys Asp Glu | Gln Val Pro Phe Ser Lys Glu Glu Cys Ala Phe Arg Ser | | | | | |
| | 420 | | 425 | | 430 | |
| Gln Leu Glu | Thr Pro Glu Thr Leu Leu Gly Ser Thr Glu Glu Lys Pro | | | | | |
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 agatcactgg ctttggaataa gagaattota ccgactatct ctatccggag cagctgaaga 1080
 tgactgttgt gaagctgatt tcccaccggg agtgtcagca gcccactac tacggctctg 1140
 aagtaccac caaaatgctg tgtgtgtgtg accacagtg gaaacagat tctgtccagg 1200
 gagactcagg gggaccctc gtctgttccc tccaaggccg catgactttg actggaattg 1260
 tgagctgggg ccgtggatgt gccctgaagg acaagccagg cgtctacacg agagtctcac 1320
 acttcttacc ctggatccgc agtcacacca aggaagagaa tggcctggcc ctctgagggg 1380
 cccaggggag gaaacgggca ccaccgctt tctgtgtgtg tgtcattttt gcagtagagt 1440
 catctccatc agctgtaaga agagactggg aagat 1475

<210> 34
 <211> 431
 <212> PRT
 <213> Homo sapiens

<400> 34
 Met Arg Ala Leu Leu Ala Arg Leu Leu Leu Cys Val Leu Val Val Ser
 1 5 10 15
 Asp Ser Lys Gly Ser Asn Glu Leu His Gln Val Pro Ser Asn Cys Asp
 20 25 30
 Cys Leu Asn Gly Gly Thr Cys Val Ser Asn Lys Tyr Phe Ser Asn Ile
 35 40 45
 His Trp Cys Asn Cys Pro Lys Lys Phe Gly Gly Gln His Cys Glu Ile
 50 55 60
 Asp Lys Ser Lys Thr Cys Tyr Glu Gly Asn Gly His Phe Tyr Arg Gly
 65 70 75 80
 Lys Ala Ser Thr Asp Thr Met Gly Arg Pro Cys Leu Pro Trp Asn Ser
 85 90 95
 Ala Thr Val Leu Gln Gln Thr Tyr His Ala His Arg Ser Asp Ala Leu
 100 105 110
 Gln Leu Gly Leu Gly Lys His Asn Tyr Cys Arg Asn Pro Asp Asn Arg
 115 120 125
 Arg Arg Pro Trp Cys Tyr Val Gln Val Gly Leu Lys Pro Leu Val Gln
 130 135 140
 Glu Cys Met Val His Asp Cys Ala Asp Gly Lys Lys Pro Ser Ser Pro
 145 150 155 160
 Pro Glu Glu Leu Lys Phe Gln Cys Gly Gln Lys Thr Leu Arg Pro Arg
 165 170 175
 Phe Lys Ile Ile Gly Gly Glu Phe Thr Thr Ile Glu Asn Gln Pro Trp

| | | | | | | | | | | | | | | | |
|-------|--------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | 180 | | 185 | | 190 | | | | | | | | | | |
| Phe | Ala | Ala | Ile | Tyr | Arg | Arg | His | Arg | Gly | Gly | Ser | Val | Thr | Tyr | Val |
| | 195 | | | | | | 200 | | | | | 205 | | | |
| Cys | Gly | Gly | Ser | Leu | Ile | Ser | Pro | Cys | Trp | Val | Ile | Ser | Ala | Thr | His |
| | 210 | | | | | | 215 | | | | | 220 | | | |
| Cys | Phe | Ile | Asp | Tyr | Pro | Lys | Lys | Glu | Asp | Tyr | Ile | Val | Tyr | Leu | Gly |
| | 225 | | | | | 230 | | | | 235 | | | | | 240 |
| Arg | Ser | Arg | Leu | Asn | Ser | Asn | Thr | Gln | Gly | Glu | Met | Lys | Phe | Glu | Val |
| | | | 245 | | | | | | 250 | | | | | 255 | |
| Glu | Asn | Leu | Ile | Leu | His | Lys | Asp | Tyr | Ser | Ala | Asp | Thr | Leu | Ala | His |
| | | 260 | | | | | | 265 | | | | | 270 | | |
| His | Asn | Asp | Ile | Ala | Leu | Leu | Lys | Ile | Arg | Ser | Lys | Glu | Gly | Arg | Cys |
| | | 275 | | | | | 280 | | | | | | 285 | | |
| Ala | Gln | Pro | Ser | Arg | Thr | Ile | Gln | Thr | Ile | Cys | Leu | Pro | Ser | Met | Tyr |
| | 290 | | | | | 295 | | | | | 300 | | | | |
| Asn | Asp | Pro | Gln | Phe | Gly | Thr | Ser | Cys | Glu | Ile | Thr | Gly | Phe | Gly | Lys |
| | 305 | | | | 310 | | | | | 315 | | | | | 320 |
| Glu | Asn | Ser | Thr | Asp | Tyr | Leu | Tyr | Pro | Glu | Gln | Leu | Lys | Met | Thr | Val |
| | | | 325 | | | | | | 330 | | | | | 335 | |
| Val | Lys | Leu | Ile | Ser | His | Arg | Glu | Cys | Gln | Gln | Pro | His | Tyr | Tyr | Gly |
| | | 340 | | | | | 345 | | | | | | 350 | | |
| Ser | Glu | Val | Thr | Thr | Lys | Met | Leu | Cys | Ala | Ala | Asp | Pro | Gln | Trp | Lys |
| | | 355 | | | | | 360 | | | | | 365 | | | |
| Thr | Asp | Ser | Cys | Gln | Gly | Asp | Ser | Gly | Gly | Pro | Leu | Val | Cys | Ser | Leu |
| | 370 | | | | | 375 | | | | | 380 | | | | |
| Gln | Gly | Arg | Met | Thr | Leu | Thr | Gly | Ile | Val | Ser | Trp | Gly | Arg | Gly | Cys |
| | 385 | | | | 390 | | | | 395 | | | | | | 400 |
| Ala | Leu | Lys | Asp | Lys | Pro | Gly | Val | Tyr | Thr | Arg | Val | Ser | His | Phe | Leu |
| | | | 405 | | | | | | 410 | | | | | 415 | |
| Pro | Trp | Ile | Arg | Ser | His | Thr | Lys | Glu | Glu | Asn | Gly | Leu | Ala | Leu | |
| | | | 420 | | | | | 425 | | | | | 430 | | |
| <210> | 35 | | | | | | | | | | | | | | |
| <211> | 107 | | | | | | | | | | | | | | |
| <212> | PRT | | | | | | | | | | | | | | |
| <213> | Mus musculus | | | | | | | | | | | | | | |
| <400> | 35 | | | | | | | | | | | | | | |
| Asp | Ile | Gln | Met | Thr | Gln | Ser | Pro | Ser | Ser | Leu | Ser | Ala | Ser | Val | Gly |
| | 1 | | | 5 | | | | | 10 | | | | | 15 | |
| Asp | Arg | Val | Thr | Ile | Thr | Cys | Arg | Ala | Ser | Gln | Asp | Val | Asn | Thr | Ala |
| | | 20 | | | | | | 25 | | | | | 30 | | |
| Val | Ala | Trp | Tyr | Gln | Gln | Lys | Pro | Gly | Lys | Ala | Pro | Lys | Leu | Leu | Ile |
| | | 35 | | | | | 40 | | | | | 45 | | | |

Tyr Ser Ala Ser Phe Leu Tyr Ser Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

Ser Arg Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
65 70 75 80

Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln His Tyr Thr Thr Pro Pro
85 90 95

Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys
100 105

<210> 36
<211> 120
<212> PRT
<213> Mus musculus

<400> 36
Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
1 5 10 15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Asn Ile Lys Asp Thr
20 25 30

Tyr Ile His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
35 40 45

Ala Arg Ile Tyr Pro Thr Asn Gly Tyr Thr Arg Tyr Ala Asp Ser Val
50 55 60

Lys Gly Arg Phe Thr Ile Ser Ala Asp Thr Ser Lys Asn Thr Ala Tyr
65 70 75 80

Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
85 90 95

Ser Arg Trp Gly Gly Asp Gly Phe Tyr Ala Met Asp Tyr Trp Gly Gln
100 105 110

Gly Thr Leu Val Thr Val Ser Ser
115 120

<210> 37
<211> 120
<212> PRT
<213> Mus musculus

<400> 37
Gln Val Thr Leu Arg Glu Ser Gly Pro Ala Leu Val Lys Pro Thr Gln
1 5 10 15

Thr Leu Thr Leu Thr Cys Thr Phe Ser Gly Phe Ser Leu Ser Thr Ser
20 25 30

Gly Met Ser Val Gly Trp Ile Arg Gln Pro Ser Gly Lys Ala Leu Glu
35 40 45

Trp Leu Ala Asp Ile Trp Trp Asp Asp Lys Lys Asp Tyr Asn Pro Ser
50 55 60

Leu Lys Ser Arg Leu Thr Ile Ser Lys Asp Thr Ser Lys Asn Gln Val
 65 70 75 80
 Val Leu Lys Val Thr Asn Met Asp Pro Ala Asp Thr Ala Thr Tyr Tyr
 85 90 95
 Cys Ala Arg Ser Met Ile Thr Asn Trp Tyr Phe Asp Val Trp Gly Ala
 100 105 110
 Gly Thr Thr Val Thr Val Ser Ser
 115 120
 <210> 38
 <211> 106
 <212> PRT
 <213> Mus musculus
 <400> 38
 Asp Ile Gln Met Thr Gln Ser Pro Ser Thr Leu Ser Ala Ser Val Gly
 1 5 10 15
 Asp Arg Val Thr Ile Thr Cys Lys Cys Gln Leu Ser Val Gly Tyr Met
 20 25 30
 His Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Trp Ile Tyr
 35 40 45
 Asp Thr Ser Lys Leu Ala Ser Gly Val Pro Ser Arg Phe Ser Gly Ser
 50 55 60
 Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro Asp
 65 70 75 80
 Asp Phe Ala Thr Tyr Tyr Cys Phe Gln Gly Ser Gly Tyr Pro Phe Thr
 85 90 95
 Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
 100 105

<210> 39
 <211> 1039
 <212> DNA
 <213> Homo sapiens
 <400> 39
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 tttttcttaa gcagcaaaag gagaaaattg tcatcaaagg atattccaga ttcttgacag 120
 cattctcgtc atctctgagg acatcaccat catctcagga tgagggggcat gaagctgctg 180
 ggggcgtgc tggcactggc ggcctactg cagggggccg tgtccctgaa gatcgagcc 240
 ttcaacatcc agacatttgg ggagaccaag atgtccaatg ccacctcgt cagctacatt 300
 gtgcagatcc tgagccgcta tgacatcgcc ctgggtccagg aggtcagaga cagccacctg 360
 actgcctgtg ggaagctgct ggacaacctc aatcaggatg caccagacac ctatcactac 420
 gtggtcagtg agccactggg acggaacagc tataaggagc gctacctgtt cgtgtacag 480

cctgaccagg tgtctgcggt ggacagctac tactacgatg atggctgcga gccctgcggg 540
 aacgacacct tcaaccgaga gccagccatt gtcaggttct tctccgggtt cacagaggtc, 600
 agggagtttg ccattgttcc cctgcatgcg gccccggggg acgcagtagc cgagatcgac 660
 gctctctatg acgtctacct ggatgtccaa gagaaatggg gcttggagga cgtcatgttg 720
 atgggcgact tcaatgcggg ctgcagctat gtgagaccct cccagtggtc atccatccgc 780
 ctgtggacaa gcccaccctt ccagtggctg atccccgaca gcgctgacac cacagctaca 840
 cccagccact gtgcctatga caggatcgctg gttgcagggg tgctgctcgg aggcgcggtt 900
 gttcccgact cggctcttcc cttaacttc caggctgcct atggcctgag tgaccaactg 960
 gcccaagcca tcagtgacca ctatccagtg gaggtgatgc tgaagtgagc agcccctccc 1020
 cacaccagtt gaactgcag 1039

<210> 40

<211> 282

<212> PRT

<213> Homo sapiens

<400> 40

Met Arg Gly Met Lys Leu Leu Gly Ala Leu Leu Ala Leu Ala Ala Leu
1 5 10 15

Leu Gln Gly Ala Val Ser Leu Lys Ile Ala Ala Phe Asn Ile Gln Thr
20 25 30

Phe Gly Glu Thr Lys Met Ser Asn Ala Thr Leu Val Ser Tyr Ile Val
35 40 45

Gln Ile Leu Ser Arg Tyr Asp Ile Ala Leu Val Gln Glu Val Arg Asp
50 55 60

Ser His Leu Thr Ala Val Gly Lys Leu Leu Asp Asn Leu Asn Gln Asp
65 70 75 80

Ala Pro Asp Thr Tyr His Tyr Val Val Ser Glu Pro Leu Gly Arg Asn
85 90 95

Ser Tyr Lys Glu Arg Tyr Leu Phe Val Tyr Arg Pro Asp Gln Val Ser
100 105 110

Ala Val Asp Ser Tyr Tyr Tyr Asp Asp Gly Cys Glu Pro Cys Gly Asn
115 120 125

Asp Thr Phe Asn Arg Glu Pro Ala Ile Val Arg Phe Phe Ser Arg Phe
130 135 140

Thr Glu Val Arg Glu Phe Ala Ile Val Pro Leu His Ala Ala Pro Gly
145 150 155 160

Asp Ala Val Ala Glu Ile Asp Ala Leu Tyr Asp Val Tyr Leu Asp Val
165 170 175

Gln Glu Lys Trp Gly Leu Glu Asp Val Met Leu Met Gly Asp Phe Asn
180 185 190

Ala Gly Cys Ser Tyr Val Arg Pro Ser Gln Trp Ser Ser Ile Arg Leu
 195 200 205

Trp Thr Ser Pro Thr Phe Gln Trp Leu Ile Pro Asp Ser Ala Asp Thr
 210 215 220

Thr Ala Thr Pro Thr His Cys Ala Tyr Asp Arg Ile Val Val Ala Gly
 225 230 235 240

Met Leu Leu Arg Gly Ala Val Val Pro Asp Ser Ala Leu Pro Phe Asn
 245 250 255

Phe Gln Ala Ala Tyr Gly Leu Ser Asp Gln Leu Ala Gln Ala Ile Ser
 260 265 270

Asp His Tyr Pro Val Glu Val Met Leu Lys
 275 280

<210> 41
 <211> 678
 <212> DNA
 <213> Mus musculus

<400> 41
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 ttctcttcca gggccagtc gttcgttggc tcaagcatcc actggtatca gcaagaaca 120
 aatggtcttc caagccttct cataaagtat gttcttgagt ctatgtctgg gatcccttc 180
 aggtttagt gcatgggato agggacagat tttactctta gcatcaaac tgtggagtct 240
 gaagatattg cagattatta ctgtcaacaa agtcatagct ggccattcac gttcggctcg 300
 gggacaaatt tggaagtaaa agaagtgaag cttgaggagt ctggaggagg cttggtgcaa 360
 cctggaggat coactgaaact ctctgtgtt gcctctggat tcatittcag taacctctgg 420
 atgaactggg tccgccagtc tccagagaag gggottgagt gggttgctga aattagatca 480
 aaatctatta attctgcaac acattatgcg gactctgtga aaggagggt caccatctca 540
 agagatgatt ccaaaagtgc tgtctacctg caaatgaccg acttaagaac tgaagacact 600
 ggcgttttatt actgttccag gaattactac ggtagtacct acgactactg gggccaaggc 660
 accactctca cagtctcc 678

<210> 42
 <211> 226
 <212> PRT
 <213> Mus musculus

<400> 42
 Asp Ile Leu Leu Thr Gln Ser Pro Ala Ile Leu Ser Val Ser Pro Gly
 1 5 10 15
 Glu Arg Val Ser Phe Ser Cys Arg Ala Ser Gln Phe Val Gly Ser Ser
 20 25 30

Ile His Trp Tyr Gln Gln Arg Thr Asn Gly Ser Pro Arg Leu Leu Ile
 35 40 45
 Lys Tyr Ala Ser Glu Ser Met Ser Gly Ile Pro Ser Arg Phe Ser Gly
 50 55 60
 Ser Gly Ser Gly Thr Asp Phe Thr Leu Ser Ile Asn Thr Val Glu Ser
 65 70 75 80
 Glu Asp Ile Ala Asp Tyr Tyr Cys Gln Gln Ser His Ser Trp Pro Phe
 85 90 95
 Thr Phe Gly Ser Gly Thr Asn Leu Glu Val Lys Glu Val Lys Leu Glu
 100 105 110
 Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly Ser Met Lys Leu Ser
 115 120 125
 Cys Val Ala Ser Gly Phe Ile Phe Ser Asn His Trp Met Asn Trp Val
 130 135 140
 Arg Gln Ser Pro Glu Lys Gly Leu Glu Trp Val Ala Glu Ile Arg Ser
 145 150 155 160
 Lys Ser Ile Asn Ser Ala Thr His Tyr Ala Glu Ser Val Lys Gly Arg
 165 170 175
 Phe Thr Ile Ser Arg Asp Asp Ser Lys Ser Ala Val Tyr Leu Gln Met
 180 185 190
 Thr Asp Leu Arg Thr Glu Asp Thr Gly Val Tyr Tyr Cys Ser Arg Asn
 195 200 205
 Tyr Tyr Gly Ser Thr Tyr Asp Tyr Trp Gly Gln Gly Thr Thr Leu Thr
 210 215 220

Val Ser
225

<210> 43
 <211> 450
 <212> DNA
 <213> Homo sapiens

<400> 43
 gctgcatcag aagaggccat caagcacatc actgtccctc tgccatggcc ctgtggatgc 60
 gccctctgcc cctgtctggc ctgctggccc tctggggacc tgacccagcc gcagccttct 120
 tgaaccaaca cctgtgctgc toacacctgg tggaagctct ctacctagtg tgcgggggaa 180
 gaggtctctt ctacacaccc aagaccgccg gggaggcaga ggacctgcag gtggggcgag 240
 tggagctggg cggggggccct ggtgcaggca gccctgcagcc cttggccctg gaggggtccc 300
 tgcagaagcg ttgcattgtg gaacaatgct gtaccagcat ctgctccctc taccagctgg 360
 agaactactg caactagacg cagcccgcag gcagccccc acccgccgcc tctgtcaccc 420
 agagagatgg aataaagccc ttgaaccagc 450

<210> 44
 <211> 110
 <212> PRT
 <213> Homo sapiens

<400> 44
 Met Ala Leu Trp Met Arg Leu Leu Pro Leu Leu Ala Leu Leu Ala Leu
 1 5 10 15
 Trp Gly Pro Asp Pro Ala Ala Ala Phe Val Asn Gln His Leu Cys Gly
 20 25 30
 Ser His Leu Val Glu Ala Leu Tyr Leu Val Cys Gly Glu Arg Gly Phe
 35 40 45
 Phe Tyr Thr Pro Lys Thr Arg Arg Glu Ala Glu Asp Leu Gln Val Gly
 50 55 60
 Gln Val Glu Leu Gly Gly Gly Pro Gly Ala Gly Ser Leu Gln Pro Leu
 65 70 75 80
 Ala Leu Glu Gly Ser Leu Gln Lys Arg Gly Ile Val Glu Gln Cys Cys
 85 90 95
 Thr Ser Ile Cys Ser Leu Tyr Gln Leu Glu Asn Tyr Cys Asn
 100 105 110

<210> 45
 <211> 1203
 <212> DNA
 <213> Hepatitis B virus

<400> 45
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 cctctgggat tctttccoga tcaccagttg gacctcggt tcggagccaa ctcaacaat 120
 ccagattggg acttcaacc caacaaggat cactggccag aggcaatcaa ggtaggagcg 180
 ggagacttcg ggccagggtt caccaccaca caccggcggt ttttggggtg gagccctcag 240
 gctcagggca tattgacaac agtgccagca gcgcctctc ctgtttccac caatcgagc 300
 tcaggaagac agcctactcc catctctcca cctctaagag acagtcatcc tcaggccatg 360
 cagtgaact ccacaacatt ccaccaagct ctgctagatc ccagagttag ggcctatat 420
 tttcctgctg gtggctccag ttccggaaca gttaaaccctg ttccgactac tgtctcacc 480
 atatcgtaaa tcttctcgag gactggggac cctgcacoga acatggagag cacaacatca 540
 ggattcttag gacctgct cgtgttacag gcggggtttt tcttgttgac aagaatctc 600
 acaataccac agagtctaga ctggtggtg acttctctca atttcttagg gggagcacc 660
 acgtgtcctg gccaaaattc gcagtcacca acctccaatc actcaccac ctctgttct 720
 ccaatttgct ctggttatcg ctggatgtgt ctgcggcggt ttatcatatt cctcttcac 780
 ctgctgtat gccctatctt cttgttggtt cttctggact accaaggat gttgcccggt 840

tgtcctctac ttccaggaac atcaactacc agcacgggac catgcaagac ctgcacgatt 900
 cctgctcaag gaacctctat gtttccctct tgttgctgta caaaaccttc ggacggaac 960
 tgcacttgta ttcccatccc atcactctgg gctttcgcaa gattcctatg ggagtgggcc 1020
 tcagtcggtt tctcctggct cagtttacta gtgcatttg ttcagtgggt cgcagggctt 1080
 tccccactg tttggcttcc agttatatgg atgatgtggt attgggggcc aagtctgtac 1140
 aacatcttga gtcccttttt acctctatta ccaattttct tttgtctttg ggtatacatt 1200
 tga 1203

<210> 46
 <211> 400
 <212> PRT
 <213> Hepatitis B virus

<400> 46
 Met Gly Gly Trp Ser Ser Lys Pro Arg Gln Gly Met Gly Thr Asn Leu
 1 5 10 15
 Ser Val Pro Asn Pro Leu Gly Phe Phe Pro Asp His Gln Leu Asp Pro
 20 25 30
 Ala Phe Gly Ala Asn Ser Asn Asn Pro Asp Trp Asp Phe Asn Pro Asn
 35 40 45
 Lys Asp His Trp Pro Glu Ala Ile Lys Val Gly Ala Gly Asp Phe Gly
 50 55 60
 Pro Gly Phe Thr Pro Pro His Gly Gly Leu Leu Gly Trp Ser Pro Gln
 65 70 75 80
 Ala Gln Gly Ile Leu Thr Thr Val Pro Ala Ala Pro Pro Pro Val Ser
 85 90 95
 Thr Asn Arg Gln Ser Gly Arg Gln Pro Thr Pro Ile Ser Pro Pro Leu
 100 105 110
 Arg Asp Ser His Pro Gln Ala Met Gln Trp Asn Ser Thr Thr Phe His
 115 120 125
 Gln Ala Leu Leu Asp Pro Arg Val Arg Gly Leu Tyr Phe Pro Ala Gly
 130 135 140
 Gly Ser Ser Ser Gly Thr Val Asn Pro Val Pro Thr Thr Val Ser Pro
 145 150 155 160
 Ile Ser Ser Ile Phe Ser Arg Thr Gly Asp Pro Ala Pro Asn Met Glu
 165 170 175
 Ser Thr Thr Ser Gly Phe Leu Gly Pro Leu Leu Val Leu Gln Ala Gly
 180 185 190
 Phe Phe Leu Leu Thr Arg Ile Leu Thr Ile Pro Gln Ser Leu Asp Ser
 195 200 205
 Trp Trp Thr Ser Leu Asn Phe Leu Gly Gly Ala Pro Thr Cys Pro Gly
 210 215 220

Gln Asn Ser Gln Ser Pro Thr Ser Asn His Ser Pro Thr Ser Cys Pro
 225 230 235 240
 Pro Ile Cys Pro Gly Tyr Arg Trp Met Cys Leu Arg Arg Phe Ile Ile
 245 250 255
 Phe Leu Phe Ile Leu Leu Leu Cys Leu Ile Phe Leu Leu Val Leu Leu
 260 265 270
 Asp Tyr Gln Gly Met Leu Pro Val Cys Pro Leu Leu Pro Gly Thr Ser
 275 280 285
 Thr Thr Ser Thr Gly Pro Cys Lys Thr Cys Thr Ile Pro Ala Gln Gly
 290 295 300
 Thr Ser Met Phe Pro Ser Cys Cys Cys Thr Lys Pro Ser Asp Gly Asn
 305 310 315 320
 Cys Thr Cys Ile Pro Ile Pro Ser Ser Trp Ala Phe Ala Arg Phe Leu
 325 330 335
 Trp Glu Trp Ala Ser Val Arg Phe Ser Trp Leu Ser Leu Leu Val Pro
 340 345 350
 Phe Val Gln Trp Phe Ala Gly Leu Ser Pro Thr Val Trp Leu Ser Val
 355 360 365
 Ile Trp Met Met Trp Tyr Trp Gly Pro Ser Leu Tyr Asn Ile Leu Ser
 370 375 380
 Pro Phe Leu Pro Leu Leu Pro Ile Phe Phe Cys Leu Trp Val Tyr Ile
 385 390 395 400

<210> 47

<211> 799

<212> DNA

<213> Homo sapiens

<400> 47

cgaaccactc agggctcctgt ggacagctca cctagctgca atggctacag gctcccgga 60
 gtccctgctc ctggcttttg gctgctctg cctgacctgg cttcaagagg gcagtgacct 120
 cccaaccatt cccttatcca ggccttttga caacgctatg ctcgcgcgcc atcgtctgca 180
 ccagctggcc tttagacctt accaggagtt tgaagaagcc tatatcccaa aggaacagaa 240
 gtattcatct ctgcagaacc ccagacctc cctctgtttc tcagagtcta ttccgacacc 300
 ctccaacagg gaggaaacac aacagaaatc caacctagag ctgctccgca tctcctgct 360
 gctcatccag tcgtggctgg agcccgctga gtctctcagg agtgctctcg ccaacagcct 420
 ggtgtacggc gctctgaca gcaacgtcta tgacctcta aaggacctag aggaaggcat 480
 ccaaacgctg atggggaggc tggaagatgg cagcccccg actgggcaga tcttcaagca 540
 gacctacagc aagttcgaca caaactcaca caacgatgac gcactactca agaactacgg 600
 gctgctctac tgcttcagga aggacatgga caaggctgag acattctctg ccatogtgca 660

gtgccgctct gtggagggca gctgtggctt ctatgtgccc ggggtggcatc cctgtgaccc 720
 ctccccagtg cctctcctgg ccttggaagt tgccactcca gtgcccacca gccctgtcct 780
 aataaaatta agttgcatc 799

<210> 48
 <211> 217
 <212> FRT
 <213> Homo sapiens

<400> 48
 Met Ala Thr Gly Ser Arg Thr Ser Leu Leu Leu Ala Phe Gly Leu Leu
 1 5 10 15
 Cys Leu Pro Trp Leu Gln Glu Gly Ser Ala Phe Pro Thr Ile Pro Leu
 20 25 30
 Ser Arg Pro Phe Asp Asn Ala Met Leu Arg Ala His Arg Leu His Gln
 35 40 45
 Leu Ala Phe Asp Thr Tyr Gln Glu Phe Glu Glu Ala Tyr Ile Pro Lys
 50 55 60
 Glu Gln Lys Tyr Ser Phe Leu Gln Asn Pro Gln Thr Ser Leu Cys Phe
 65 70 75 80
 Ser Glu Ser Ile Pro Thr Pro Ser Asn Arg Glu Glu Thr Gln Gln Lys
 85 90 95
 Ser Asn Leu Glu Leu Leu Arg Ile Ser Leu Leu Leu Ile Gln Ser Trp
 100 105 110
 Leu Glu Pro Val Gln Phe Leu Arg Ser Val Phe Ala Asn Ser Leu Val
 115 120 125
 Tyr Gly Ala Ser Asp Ser Asn Val Tyr Asp Leu Leu Lys Asp Leu Glu
 130 135 140
 Glu Gly Ile Gln Thr Leu Met Gly Arg Leu Glu Asp Gly Ser Pro Arg
 145 150 155 160
 Thr Gly Gln Ile Phe Lys Gln Thr Tyr Ser Lys Phe Asp Thr Asn Ser
 165 170 175
 His Asn Asp Asp Ala Leu Leu Lys Asn Tyr Gly Leu Leu Tyr Cys Phe
 180 185 190
 Arg Lys Asp Met Asp Lys Val Glu Thr Phe Leu Arg Ile Val Gln Cys
 195 200 205
 Arg Ser Val Glu Gly Ser Cys Gly Phe
 210 215

<210> 49
 <211> 963
 <212> DNA
 <213> Homo sapiens

<400> 49

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gtcccggcgg agtgcttcga cctgctgtgc cgcactgcgg tggcctgcgg gctcctgcgc 180
acgcccgccg cgaacccggc cggggccagc agccctgcgc ccaggacggc gctgcagccg 240
caggagtccg tgggcgcggg ggccggcgag gcggcggtcg acaaaactca cacatgccca 300
ccgtgcccag cacctgaact cctgggggga ccgtcagtct tcctcttccc cccaaaaccc 360
aaggacaccc tcattgatct cgggaccctt gaggtcacat gcgtggtggt ggacgtgagc 420
cacgaagacc ctgaggtcaa gttcaactgg tacgtggacg gcgtggaggt gcataatgcc 480
aagacaaagc cgcgggagga gcagtacaac agcacgtacc gtgtggtcag cgtcctcacc 540
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<213> Homo sapiens

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Lys Pro Ala Gly Ala Ser Ser Pro Ala Pro Arg Thr Ala Leu Gln Pro
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His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser
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 Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val
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 Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr
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 Gly Val Ile Tyr Pro Gly Ser Gly Gly Thr Asn Tyr Asn Glu Lys Phe
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 Gly Val Ile Tyr Pro Gly Ser Gly Gly Thr Asn Tyr Asn Glu Lys Phe
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 Met Gln Leu Ser Ser Leu Thr Ser Asp Asp Ser Ala Val Tyr Phe Cys
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 Thr Phe Lys Ala Asn Arg Pro Phe Leu Val Phe Ile Arg Glu Val Pro
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 Leu Asn Thr Ile Ile Phe Met Gly Arg Val Ala Asn Pro Cys Val Lys
 450 455 460

<210> 65

<211> 1962

<212> DNA

<213> Homo sapiens

<400> 65

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tggccctcgc ggcgttctgc gaggagcaca ggcttctgcc ccccgctgcc acacagccag 18

gctgaccagt acgtcctcag ctgggaccag cagctcaacc tcgcctatgt gggcgccgtc 240
 cctcaccgcg gcatacaagca ggtccggacc cactggctgc tggagcttgt caccaccagg 300
 gggtcaccag gacggggcct gagctacaac ttcaccacc tggacgggta ctgggacctt 360
 ctcagggaga accagctcct ccaggggttt gagctgatgg gcagcgccctc gggccacctt 420
 actgactttg aggacaagca gcaggtgttt gagtggaaag acttggtctc cagcctggcc 480
 aggagatata tcggtaggtta cggactggcg catgtttcca agtggaaactt cgagacgtgg 540
 aatgagccag accaccacga ctttgacaac gtctccatga ccatgcaagg ctctctgaac 600
 tactacgatg cctgctcgga gggctctgcg gccgcacgac ccgccctgcg gctggggaggc 660
 cccggcgact ccttccacac ccaccgcga tccccgctga gctggggcct cctgcgccac 720
 tgccacgacg gtaccaactt ctctactggg gagggcgcg tgcggttgga ctacatctcc 780
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 accttaacc tcttctgttt cagcccagac acaggtgctg tctctggctc ctaccgagtt 1860
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 gtccctgtgc caagagggcc cccatccccc ggcaatccat ga 1962

<210> 66
 <211> 653
 <212> PRT
 <213> Homo sapiens

 <400> 66
 Met Arg Pro Leu Arg Pro Arg Ala Ala Leu Leu Ala Leu Leu Ala Ser
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 Leu Leu Ala Ala Pro Pro Val Ala Pro Ala Glu Ala Pro His Leu Val
 20 25 30

 Gln Val Asp Ala Ala Arg Ala Leu Trp Pro Leu Arg Arg Phe Trp Arg
 35 40 45

 Ser Thr Gly Phe Cys Pro Pro Leu Pro His Ser Gln Ala Asp Gln Tyr
 50 55 60

 Val Leu Ser Trp Asp Gln Gln Leu Asn Leu Ala Tyr Val Gly Ala Val
 65 70 75 80

 Pro His Arg Gly Ile Lys Gln Val Arg Thr His Trp Leu Leu Glu Leu
 85 90 95

 Val Thr Thr Arg Gly Ser Thr Gly Arg Gly Leu Ser Tyr Asn Phe Thr
 100 105 110

 His Leu Asp Gly Tyr Leu Asp Leu Arg Glu Asn Gln Leu Leu Pro
 115 120 125

 Gly Phe Glu Leu Met Gly Ser Ala Ser Gly His Phe Thr Asp Phe Glu
 130 135 140

 Asp Lys Gln Gln Val Phe Glu Trp Lys Asp Leu Val Ser Ser Leu Ala
 145 150 155 160

 Arg Arg Tyr Ile Gly Arg Tyr Gly Leu Ala His Val Ser Lys Trp Asn
 165 170 175

 Phe Glu Thr Trp Asn Glu Pro Asp His His Asp Phe Asp Asn Val Ser
 180 185 190

 Met Thr Met Gln Gly Phe Leu Asn Tyr Tyr Asp Ala Cys Ser Glu Gly
 195 200 205

 Leu Arg Ala Ala Ser Pro Ala Leu Arg Leu Gly Gly Pro Gly Asp Ser
 210 215 220

 Phe His Thr Pro Pro Arg Ser Pro Leu Ser Trp Gly Leu Leu Arg His
 225 230 235 240

 Cys His Asp Gly Thr Asn Phe Phe Thr Gly Glu Ala Gly Val Arg Leu
 245 250 255

 Asp Tyr Ile Ser Leu His Arg Lys Gly Ala Arg Ser Ser Ile Ser Ile
 260 265 270

 Leu Glu Gln Glu Lys Val Val Ala Gln Gln Ile Arg Gln Leu Phe Pro
 275 280 285

 Lys Phe Ala Asp Thr Pro Ile Tyr Asn Asp Glu Ala Asp Pro Leu Val

| | | |
|---|-----|---------|
| 290 | 295 | 300 |
| Gly Trp Ser Leu Pro Gln Pro Trp Arg Ala Asp Val Thr Tyr Ala Ala | | |
| 305 | 310 | 315 320 |
| Met Val Val Lys Val Ile Ala Gln His Gln Asn Leu Leu Leu Ala Asn | | |
| | 325 | 330 335 |
| Thr Thr Ser Ala Phe Pro Tyr Ala Leu Leu Ser Asn Asp Asn Ala Phe | | |
| | 340 | 345 350 |
| Leu Ser Tyr His Pro His Pro Phe Ala Gln Arg Thr Leu Thr Ala Arg | | |
| | 355 | 360 365 |
| Phe Gln Val Asn Asn Thr Arg Pro Pro His Val Gln Leu Leu Arg Lys | | |
| | 370 | 375 380 |
| Pro Val Leu Thr Ala Met Gly Leu Leu Ala Leu Leu Asp Glu Glu Gln | | |
| 385 | 390 | 395 400 |
| Leu Trp Ala Glu Val Ser Gln Ala Gly Thr Val Leu Asp Ser Asn His | | |
| | 405 | 410 415 |
| Thr Val Gly Val Leu Ala Ser Ala His Arg Pro Gln Gly Pro Ala Asp | | |
| | 420 | 425 430 |
| Ala Trp Arg Ala Ala Val Leu Ile Tyr Ala Ser Asp Asp Thr Arg Ala | | |
| | 435 | 440 445 |
| His Pro Asn Arg Ser Val Ala Val Thr Leu Arg Leu Arg Gly Val Pro | | |
| 450 | 455 | 460 |
| Pro Gly Pro Gly Leu Val Tyr Val Thr Arg Tyr Leu Asp Asn Gly Leu | | |
| 465 | 470 | 475 480 |
| Cys Ser Pro Asp Gly Glu Trp Arg Arg Leu Gly Arg Pro Val Phe Pro | | |
| | 485 | 490 495 |
| Thr Ala Glu Gln Phe Arg Arg Met Arg Ala Ala Glu Asp Pro Val Ala | | |
| | 500 | 505 510 |
| Ala Ala Pro Arg Pro Leu Pro Ala Gly Gly Arg Leu Thr Leu Arg Pro | | |
| | 515 | 520 525 |
| Ala Leu Arg Leu Pro Ser Leu Leu Leu Val His Val Cys Ala Arg Pro | | |
| 530 | 535 | 540 |
| Glu Lys Pro Pro Gly Gln Val Thr Arg Leu Arg Ala Leu Pro Leu Thr | | |
| 545 | 550 | 555 560 |
| Gln Gly Gln Leu Val Leu Val Trp Ser Asp Glu His Val Gly Ser Lys | | |
| | 565 | 570 575 |
| Cys Leu Trp Thr Tyr Glu Ile Gln Phe Ser Gln Asp Gly Lys Ala Tyr | | |
| | 580 | 585 590 |
| Thr Pro Val Ser Arg Lys Pro Ser Thr Phe Asn Leu Phe Val Phe Ser | | |
| | 595 | 600 605 |
| Pro Asp Thr Gly Ala Val Ser Gly Ser Tyr Arg Val Arg Ala Leu Asp | | |
| 610 | 615 | 620 |

Tyr Trp Ala Arg Pro Gly Pro Phe Ser Asp Pro Val Pro Tyr Leu Glu
625 630 635 640

Val Pro Val Pro Arg Gly Pro Pro Ser Pro Gly Asn Pro
645 650

<210> 67
<211> 1290
<212> DNA
<213> Homo sapiens

<400> 67
atgcagctga ggaaccaga actacatctg ggctgogcgc ttgcgcttcg cttcctggcc 60
ctcgtttcct gggacatccc tggggctaga gcactggaca atggattggc aaggacgcct 120
accatgggct ggctgcactg ggagcgcttc atgtgcaacc ttgactgccca ggaagagcca 180
gattcctgca tcagtggaaa gctcttcagt gagatggcag agctcatggt ctcagaaggc 240
tggaaggatg cagggttatga gtacctctgc attgatgact gttggatggc tccccaaga 300
gattcagaag gcagacttca ggcagaccct cagcgctttc ctcattggat togccagcta 360
gctaattatg ttacacagca aggaactgaag ctagggtatt atgcagatgt tggaaataaa 420
acctgcgcag gcttccctcg gagttttgga tactacgaca ttgatccca gacctttgct 480
gactggggag tagatctgct aaaatttgat ggttgttact gtgacagttt ggaaaaattg 540
gcagatggtt ataagcacat gtccttgccc ctgaatagga ctggcagaag cattgtgtac 600
tctgtgagt ggccctcttta tatgtggccc ttcaaaagc ccaattatac agaaatccga 660
cagtactgca atcactggcg aaattttgct gacattgatg attcctggaa aagtataaag 720
agtatcttgg actggacatc ttttaaccag gagagaattg ttgatgttgc tggaccaggg 780
ggttggaatg acccagatat gttagtgtat ggcaactttg gcctcagctg gaatcagcaa 840
gtaactcaga tggccctotg ggctatcatg gctgctcctt tattcatgtc taatgacctc 900
cgacacatca gccctcaagc caaagctctc cttcaggata aggacgtaat tgccatcaat 960
caggacccct tgggcaagca agggtaccag cttagacagg gagacaactt tgaagtgtgg 1020
gaacgcacct tctcaggctt agcctgggct gtacgtatga taaaccggca ggagattggt 1080
ggacctcgct cttataccat cgcagttgct tccctgggta aaggagtggc ctgtaactct 1140
gcctgttca tcacacagct cctccctgtg aaaaggaagc tagggttcta tgaattgact 1200
tcaaggttaa gaagtcacat aaatoccaca ggcactgttt tgcttcagct agaaaaatac 1260
atgcagatgt cattaataa cttactttaa 1290

<210> 68
<211> 429
<212> PRT
<213> Homo sapiens

<400> 68
 Met Gln Leu Arg Asn Pro Glu Leu His Leu Gly Cys Ala Leu Ala Leu
 1 5 10 15
 Arg Phe Leu Ala Leu Val Ser Trp Asp Ile Pro Gly Ala Arg Ala Leu
 20 25 30
 Asp Asn Gly Leu Ala Arg Thr Pro Thr Met Gly Trp Leu His Trp Glu
 35 40 45
 Arg Phe Met Cys Asn Leu Asp Cys Gln Glu Glu Pro Asp Ser Cys Ile
 50 55 60
 Ser Glu Lys Leu Phe Met Glu Met Ala Glu Leu Met Val Ser Glu Gly
 65 70 75 80
 Trp Lys Asp Ala Gly Tyr Glu Tyr Leu Cys Ile Asp Asp Cys Trp Met
 85 90 95
 Ala Pro Gln Arg Asp Ser Glu Gly Arg Leu Gln Ala Asp Pro Gln Arg
 100 105 110
 Phe Pro His Gly Ile Arg Gln Leu Ala Asn Tyr Val His Ser Lys Gly
 115 120 125
 Leu Lys Leu Gly Ile Tyr Ala Asp Val Gly Asn Lys Thr Cys Ala Gly
 130 135 140
 Phe Pro Gly Ser Phe Gly Tyr Tyr Asp Ile Asp Ala Gln Thr Phe Ala
 145 150 155 160
 Asp Trp Gly Val Asp Leu Leu Lys Phe Asp Gly Cys Tyr Cys Asp Ser
 165 170 175
 Leu Glu Asn Leu Ala Asp Gly Tyr Lys His Met Ser Leu Ala Leu Asn
 180 185 190
 Arg Thr Gly Arg Ser Ile Val Tyr Ser Cys Glu Trp Pro Leu Tyr Met
 195 200 205
 Trp Pro Phe Gln Lys Pro Asn Tyr Thr Glu Ile Arg Gln Tyr Cys Asn
 210 215 220
 His Trp Arg Asn Phe Ala Asp Ile Asp Asp Ser Trp Lys Ser Ile Lys
 225 230 235 240
 Ser Ile Leu Asp Trp Thr Ser Phe Asn Gln Glu Arg Ile Val Asp Val
 245 250 255
 Ala Gly Pro Gly Gly Trp Asn Asp Pro Asp Met Leu Val Ile Gly Asn
 260 265 270
 Phe Gly Leu Ser Trp Asn Gln Gln Val Thr Gln Met Ala Leu Trp Ala
 275 280 285
 Ile Met Ala Ala Pro Leu Phe Met Ser Asn Asp Leu Arg His Ile Ser
 290 295 300
 Pro Gln Ala Lys Ala Leu Leu Gln Asp Lys Asp Val Ile Ala Ile Asn
 305 310 315 320

Gln Asp Pro Leu Gly Lys Gln Gly Tyr Gln Leu Arg Gln Gly Asp Asn
325 330 335

Phe Glu Val Trp Glu Arg Pro Leu Ser Gly Leu Ala Trp Ala Val Ala
340 345 350

Met Ile Asn Arg Gln Glu Ile Gly Gly Pro Arg Ser Tyr Thr Ile Ala
355 360 365

Val Ala Ser Leu Gly Lys Gly Val Ala Cys Asn Pro Ala Cys Phe Ile
370 375 380

Thr Gln Leu Leu Pro Val Lys Arg Lys Leu Gly Phe Tyr Glu Trp Thr
385 390 395 400

Ser Arg Leu Arg Ser His Ile Asn Pro Thr Gly Thr Val Leu Leu Gln
405 410 415

Leu Glu Asn Thr Met Gln Met Ser Leu Lys Asp Leu Leu
420 425

<210> 69

<211> 351

<212> DNA

<213> Homo sapiens

<400> 69

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gttctccatt cgcgtcctga tgtgcaggat tgccagaat gcacgtaca ggaaaaacca 120

ttcttctccc agcgggtgc cccaatactt cagtgcattg gctgctgctt ctctagagca 180

tatcccactc cactaaggtc caagaagacg atgttggtcc aaaagaacgt cacctcagag 240

tccacttgct gtgtagctaa atcatataac agggtcacag taatggggggg tttcaaagtg 300

gagaaccaca cggcgtgcca ctgcagtact tgttattatc acaaatctta a 351

<210> 70

<211> 116

<212> PRT

<213> Homo sapiens

<400> 70

Met Asp Tyr Tyr Arg Lys Tyr Ala Ala Ile Phe Leu Val Thr Leu Ser
1 5 10 15

Val Phe Leu His Val Leu His Ser Ala Pro Asp Val Gln Asp Cys Pro
20 25 30

Glu Cys Thr Leu Gln Glu Asn Pro Phe Phe Ser Gln Pro Gly Ala Pro
35 40 45

Ile Leu Gln Cys Met Gly Cys Cys Phe Ser Arg Ala Tyr Pro Thr Pro
50 55 60

Leu Arg Ser Lys Lys Thr Met Leu Val Gln Lys Asn Val Thr Ser Glu
65 70 75 80

Ser Thr Cys Cys Val Ala Lys Ser Tyr Asn Arg Val Thr Val Met Gly
 85 95
 Gly Phe Lys Val Glu Asn His Thr Ala Cys His Cys Ser Thr Cys Tyr
 100 105 110

Tyr His Lys Ser
 115

<210> 71
 <211> 498
 <212> DNA
 <213> Homo sapiens

<400> 71
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 tccaaggagc cgcttcggcc acggtgccgc cccatcaatg ccaccctggc tgtggagaag 120
 gagggctgcc ccgtgtgcat caccgtcaac accaccatct gtgcgggcta ctgccccacc 180
 atgacccgcg tgctgcaggg ggtcctgcgc gccctgcctc aggtgggtgtg caactaccgc 240
 gatgtgcgct tcgagtcctc ccggctccct ggctgccgcg gcggcgtaaa ccccggtggtc 300
 tcctacgcgc tggtctctcag ctgtcaatgt gcaactctgc gccgcagcac cactgactgc 360
 ggggggccca aggaccacc cttgacctgt gatgaccccc gcttcaggga ctctctcttc 420
 tcaaaggccc ctccccccag ccttccaagc ccateccgac tcccggggcc ctcgagacac 480
 ccgactctcc cacaataa 498

<210> 72
 <211> 165
 <212> PRT
 <213> Homo sapiens

<400> 72
 Met Glu Met Phe Gln Gly Leu Leu Leu Leu Leu Ser Met Gly
 1 5 10 15
 Gly Thr Trp Ala Ser Lys Glu Pro Leu Arg Pro Arg Cys Arg Pro Ile
 20 25 30
 Asn Ala Thr Leu Ala Val Glu Lys Glu Gly Cys Pro Val Cys Ile Thr
 35 40 45
 Val Asn Thr Thr Ile Cys Ala Gly Tyr Cys Pro Thr Met Thr Arg Val
 50 55 60
 Leu Gln Gly Val Leu Pro Ala Leu Pro Gln Val Val Cys Asn Tyr Arg
 65 70 75 80
 Asp Val Arg Phe Glu Ser Ile Arg Leu Pro Gly Cys Pro Arg Gly Val
 85 90 95
 Asn Pro Val Val Ser Tyr Ala Val Ala Leu Ser Cys Gln Cys Ala Leu
 100 105 110
 Cys Arg Arg Ser Thr Thr Asp Cys Gly Gly Pro Lys Asp His Pro Leu

115 120 T25
 Thr Cys Asp Asp Pro Arg Phe Gln Asp Ser Ser Ser Ser Lys Ala Pro
 130 135 140
 Pro Pro Ser Leu Pro Ser Pro Ser Arg Leu Pro Gly Pro Ser Asp Thr
 145 150 155 160
 Pro Ile Leu Pro Gln
 165

<210> 73
 <211> 165
 <212> PRT
 <213> Homo sapiens

<400> 73
 Ala Pro Pro Arg Leu Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu
 1 5 10 15
 Leu Glu Ala Lys Glu Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His
 20 25 30
 Cys Ser Leu Asn Glu Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe
 35 40 45
 Tyr Ala Trp Lys Arg Met Glu Val Gly Gln Gln Ala Val Glu Val Trp
 50 55 60
 Gln Gly Leu Ala Leu Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu
 65 70 75 80
 Leu Val Asn Ser Ser Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp
 85 90 95
 Lys Ala Val Ser Gly Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu
 100 105 110
 Gly Ala Gln Lys Glu Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala
 115 120 125
 Pro Leu Arg Thr Ile Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val
 130 135 140
 Tyr Ser Asn Phe Leu Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala
 145 150 155 160
 Cys Arg Thr Gly Asp
 165

<210> 74
 <211> 588
 <212> DNA
 <213> Homo sapiens

<400> 74
 atggccctcc tgttccctct actggcagcc ctagtgatga ccagctatag cctctgttga 60
 tctctgggct gtgactctgcc tcagaacctt ggctacttta gcaggaacac ctgtgtgctt 120
 ctgcacaaaa tgaggagaat ctcccctttc ttgtgtctca aggacagaag agacttcagg 180

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ttccccagg agatggtaaa agggagccag ttgcagaagg cccatgtcat gtctgtctctc 240
catgagatgc tgcagcagat cttcagcctc ttccacacag agcgtctctc tgctgtcctgg 300
aacatgaccc tcttagacca actccacact ggacttcctc agcaactgca acacctggag 360
acctgtctgc tgcaggtagt gggagaagga gaatctgctg gggcaattag cagccctgca 420
ctgaccttga ggaggtactt ccagggaatc cgtgtctacc tgaagagaa gaaatacagc 480
gactgtgcct gggaagttgt cagaatggaa atcatgaaat ccttgttctt atcaacaac 540
atgcaagaaa gactgagaag taaagataga gacctgggct catcttga 588

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<210> 75
<211> 195
<212> PRT
<213> Homo sapiens

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<400> 75
Met Ala Leu Leu Phe Pro Leu Leu Ala Ala Leu Val Met Thr Ser Tyr
1 5 10 15

Ser Pro Val Gly Ser Leu Gly Cys Asp Leu Pro Gln Asn His Gly Leu
20 25 30

Leu Ser Arg Asn Thr Leu Val Leu Leu His Gln Met Arg Arg Ile Ser
35 40 45

Pro Phe Leu Cys Leu Lys Asp Arg Arg Asp Phe Arg Phe Pro Gln Glu
50 55 60

Met Val Lys Gly Ser Gln Leu Gln Lys Ala His Val Met Ser Val Leu
65 70 75 80

His Glu Met Leu Gln Gln Ile Phe Ser Leu Phe His Thr Glu Arg Ser
85 90 95

Ser Ala Ala Trp Asn Met Thr Leu Leu Asp Gln Leu His Thr Gly Leu
100 105 110

His Gln Gln Leu Gln His Leu Glu Thr Cys Leu Leu Gln Val Val Gly
115 120 125

Glu Gly Glu Ser Ala Gly Ala Ile Ser Ser Pro Ala Leu Thr Leu Arg
130 135 140

Arg Tyr Phe Gln Gly Ile Arg Val Tyr Leu Lys Glu Lys Lys Tyr Ser
145 150 155 160

Asp Cys Ala Trp Glu Val Val Arg Met Glu Ile Met Lys Ser Leu Phe
165 170 175

Leu Ser Thr Asn Met Gln Glu Arg Leu Arg Ser Lys Asp Arg Asp Leu
180 185 190

Gly Ser Ser
195

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